PROGRAM

ICIP 2015

IEEE International Conference on Image Processing

27-30 SEPTEMBER 2015, QUÉBEC CITY, CANADA

IEEE

IEEE Signal Processing Society

www.icip2015.org

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SUNDAY	09:00	Deep Learning in Image Processing & Vision		Visual Saliency: Fundamentals, Applications, & Recent Progress		
	12:30	Lunch				
	13:30	Computational Photography		Symbolic & Structural Models for Image Understanding		Spectral Methods in 3D Data Analysis
	19:00	**Welcome Reception (La Citadelle de Québec)**				

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MONDAY	08:00	**Opening Ceremony (200AB)**									
	09:00	PLENARY - DEEP LEARNING (200AB)									
	10:00	Break (2000 BCD)									
	10:30	Visual Content Analysis	Video Retrieval	Content Summarization & Understanding	Saliency I	Saliency II	Saliency III	Motion Estimation, Restoration & Super-resolution	Tomography	Image Analysis & Synthesis	Imaging Systems
	12:30	Lunch									
	14:00	Image & Scene Analysis	Feature Detection & Tracking	Texture Synthesis	Facial Features / Gender/Age Recognition	Visual Tracking I	Visual Tracking II	Visual Tracking III	Low-level Feature Extraction & Classification	Sparse Recovery	Hyperspectral Imaging
	16:00	Break (2000 BCD)									
	16:30	Detection & Classification	Indexing & Retrieval	Biometric Applications	Optical Flow & Motion Estimation	Face Processing	Edge & Shape Detection	Face & Gesture II	Face & Gesture I	Image & Video Restoration & Enhancement	Image Enhancement & Segmentation
	19:00	Banquet Cocktail (Foyer 2)									
	20:00	Banquet (200AB)									

PROGRAM AT A GLANCE

205B		205C			
Image Processing for Cinema		HEVC/H.265 Video Coding Standard			
Lunch					
Perceptual Metrics for Image & Video Quality in a Broader Context		Example-based Super Resolution			
Welcome Reception (La Citadelle de Québec)					

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Opening Ceremony (200AB)										
PLENARY - DEEP LEARNING (200AB)										
Break (2000 BCD)										
Texture Estimation & Classification	Color Imaging I	Color Imaging II	High-efficiency Video Coding II	Edge & Shape Models	Bio-inspired Modeling	High-efficiency Video Coding I	Image & Graphs	3D Modeling & Reconstruction	Color Imaging & Applications	Image Reconstruction
Lunch										
Radar Imaging	Seismic & Remote Sensing Imaging	Data Hiding I	Data Hiding II	Graph-based Image & Video Coding	Pose & Gesture Recognition	Classification I	Object Detection & Tracking I	HDR Imaging	Big Media Data Processing & Analysis…	Curvilinear System Analysis
Break (2000 BCD)										
Image Denoising & Recovery	Image Restoration & Denoising	Image Recovery & Enhancement	Video Streaming	Learning I	Visualization & Image Rendering	Saliency Analysis	Object Tracking	Multimedia Retrieval & Indexing	Big Data Processing & Analysis for Film and Media Production	Forensic Video & Surveillance
Banquet Cocktail (Foyer 2)										
Banquet (200AB)										

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TUESDAY	09:00	PLENARY - ADVANCES IN COMPUTATIONAL IMAGING (200AB)									
	10:00	Break (2000 BCD)									
	10:30	Foreground / Background Separation I	Foreground / Background Separation II	Human Activity Recognition I	Human Activity Recognition II	Automated Detection & Tracking in Biomedical Images II	Automated Detection & Tracking in Biomedical Images I	Image Processing Systems	3D Models & Applications	Stereoscopic, Multiview & 3-D Coding	Multi-dimensional Processing
	12:30	Lunch									
	14:00	Human Body Analysis & Tracking	Local Features	Multimedia Content Analysis	Image Segmentation I	Image Segmentation II	Multi-image & Video Super-Resolution & Restoration	Medical Image Analysis	Object-based Representation	Image Representation	Content & Privacy Protection
	16:00	Break (2000BCD)									
	16:30	Object Detection & Tracking II	Object Detection & Classification	Visual Learning with Domain Adaptation	Scene Analysis I	Scene Analysis II	Single-image Super-resolution	Energy- & Graph-based Approaches	Neurological Feature Extraction & Classification	Visual Signal Analysis	Computer-assisted Screening & Diagnosis
WEDNESDAY	09:00	PLENARY - CHALLENGES AND OPPORTUNITIES IN BIOLOGICAL IMAGING (200AB)									
	10:00	Break (2000 BCD)									
	10:30	Action Detection & Recognition I	Action Detection & Recognition II	Activity & Face Recognition	Focus & Lens	Parametric & Energy-based Segmentation	Restoration, Denoising & Demosaicking	Linear and Non-Linear Filtering	Video Quality & Image-based Specific Application Assessment	Hardware, Parallel, & Distributed System	Industry Special Session I
	12:30	Lunch									
	14:00	Machine Learning for Image Segmentation	Video Analysis	Object Recognition I	Object Recognition II	Hystocytological Feature Extraction & Classification	Image Registration, Fusion & Mosaicking I	Image Registration, Fusion & Mosaicking II	Sparse Representations & Applications	Social & Affective Media	Infrared, Multispectral & Hyperspectral imaging
	16:00	Break (2000 BCD)									
	16:30	Classification III	Video Surveillance II	Video Surveillance I	Active Contours & Levelset Methods	Object Detection & Tracking III	Image Processing Applications I	Image Processing Applications II	Face Image Anaylsis I	Face Image Anaylsis II	Supervised & Dictionary-based Approaches

Poster L	Poster M	Poster N	Poster O	202	203	204A	204B	205A	205B	205C
PLENARY - ADVANCES IN COMPUTATIONAL IMAGING (200AB)										
Break (2000 BCD)										
Image & Video Coding I	Image & Video Coding II	Image & Video Coding III	Image & Video Coding IV	Computational Imaging	3D Image Processing	Tomographic Imaging	Image Enhancement, Deblurring & Denoising	Image Segmentation & Classification	Classification II	Face Recognition I
Lunch										
Robust Hashing & Counterforensics	Text & Characters in Images	3D Object & Scene Reconstruction II	3D Object & Scene Reconstruction I	Video Coding I	Multiview / 3D Video Coding	Image Retrieval	Texture Representation	Face Recognition II	Compact Descriptor for Visual Search	Learning II
Break (2000 BCD)										
Image & Video Quality Assessment I	Image & Video Quality Assessment II	Image & Video Quality Assessment III	Image Quality Assessment	Image/Video Indexing & Retrieval for Healthcare	Discriminative Local Features	Image Denoising	Compressed Sensing	Document Analysis	Visual Biometrics	
Plenary - Challenges and Opportunities in Biological Imaging (200AB)										
Break (2000 BCD)										
Industry Special Session II	Industry Special Session III	Media Analysis & Understanding	Video Communication & Networking	Multiview Processing	Multimedia Forensics	Automated Segmentation of Radiology images	Visual Aesthetics & Quality Assessment	Image Segmentation III	Perceptual Video Compression – For HEVC & Beyond	
Lunch										
Stereo Image Processing	Multiview Image Processing	Video Coding II	Video Coding III	Omnidirectional Imaging & Plenoptics	Image Segmentation IV	Image Super-resolution	Machine Learning & Scene Analysis	3D Visual Quality	Privacy & Security in the New Generation Video Coding Systems	
Break (2000 BCD)										
Multiresolution & Wavelets	Filtering	Medical Feature Extraction & Analysis II	Medical Feature Extraction & Analysis I	Pose Estimation & Human Activity Recognition	Object Detection in Very High Resolution Satellite Images	Inpainting & Stitching	Superpixel Segmentation	Learning-based Visual Applications	Very High Resolution Satellite Image Information Extraction	

ORGANIZING COMMITTEE

General Co-Chairs
André MORIN, *Optelis*
Jean-Luc DUGELAY, *Eurecom*

Technical Co-Chairs
Jean-Philippe THIRAN, *École Polytechnique Fédérale de Lausanne (EPFL)*
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Awards Chair
Phil CHOU, *Microsoft*

WELCOME FROM THE GENERAL CHAIRS

Bienvenue à Québec !

On behalf of the IEEE Signal Processing Society and Organizing Committee, it is with great pleasure that we welcome you in Québec City for the 2015 edition of the IEEE International Conference on Image Processing.

The road to making ICIP 2015 happen was long one that started at ICIP 2009 in Cairo. The conference you are about to attend is therefore the result of six years of work by a dedicated team. While writing this welcome, we found ourselves wondering how many people were involved and the answer is, give or take a few, an astounding 4,000 people, including the organizing committee, the area chairs, the tutorials instructors, the plenary speakers, the reviewers, the authors, the suppliers, the SPS staff, the volunteers, and finally you, participants from over 60 countries, for whom we have worked hard so that you get the most of your attendance and stay in Québec.

Assembling such an impressive team of diverse origins, ages, cultures and backgrounds is a challenge but also a guarantee of diversity of opinions, and of ways of thinking from which great ideas emerge. Inevitably, and despite the lessons learned from the previous editions, there will have been a few mishaps here and there, and through the myriad of decisions taken, some that were probably not optimal. Nonetheless, we remain convinced that all who contributed to the organization gave the best of themselves, with their heart and talent to yield a program we are proud of.

The conference program assembled by our Technical Program Co-Chairs Jean-Phillippe Thiran and Fabrice Labeau, to whom we extend our warmest thanks, is obviously the focus of the conference. But if conferences are a place to learn and exchange, we believe they also are an excellent opportunity to learn about and discover new places and cultures. In that sense, Québec City, the oldest permanently inhabited settlement north of Mexico, is an ideal destination, combining the charms of its narrow streets reminiscent of Europe with the proximity of the wilderness typical of the Americas. This hybridization is also perceptible in the architecture that blends the traditions of the French and British empires that successively reigned over the country. What better place to start the adventure then than the 300-years old Citadelle de Québec, where we will greet you for the Welcome Reception. The Citadelle, cornerstone of the City defense system and the highest point in the City, was first erected by the French to defend against the British Empire and then

perfected by the British to defend against the American invasion attempts. The Citadelle is also a perfect location to admire the main tower of the Château Frontenac, Québec City's skyline hallmark signature. Good food, impressive sightline, history-laden location, and a romantic supermoon full eclipse around 21:00 should conjugate for a perfect Welcome.

Food is also part of the discoveries travel brings and the conference banquet will allow attendees to appreciate Québec City renowned gastronomy. Just after dinner, the traditional Awards Ceremony will see the iconic Mrs. Lena Söderberg present the best student paper, best conference paper, best 3MT video, and the newly introduced best industry paper awards. The banquet will conclude on sensational entertainment offering a unique blend of participation, music and humor that shall make this banquet a memorable one.

This year's edition also introduces new activities and events, notably the Students-Employers Get Together Luncheon and the 3-minute thesis video contest, and we are indebted to Sylvie Daniel and Guoliang Fan for having taken care of these. The Women-in-Signal Processing Luncheon is another first held under the auspices of our colleagues Rabab Ward and Antonia Papandreou.

The success of any conference is tightly linked to its publicity and our thanks go to Aishy Amer and Patrick Le Callet for their help in this respect. ICIP 2015 also maintained a sustained presence on all major social networks with the precious support of Benoît Huet and Abdulmotaleb El Saddik.

This welcome would not be complete without thanks to our patrons which significant contributions played a major role in the conference overall quality while maintaining a balanced budget, handled by our finance chair Jean Fortin.

We are also obliged to the whole Organizing Committee without the support of whom none of this would have been possible. Finally, other key players, which names do not appear elsewhere, also deserve our heartfelt thanks, including Mr. Alexis Levasseur from Conférium, Mrs. Diane Bussières from Bussières Communications who diligently handled the web site and printed material production, the Citadelle de Québec, the Québec City Tourism Office, and most particularly Mrs. Nathalie Nault and Mr. Jocelyn Guertin from the Québec City Convention Centre, whose indefectible faith in this project was invaluable.

Très cordialement,

Jean-Luc DUGELAY
General Co-chair
EURECOM, Sophia Antipolis

André MORIN
General Co-chair
Optelis, Québec City

TECHNICAL PROGRAM CHAIRS' OVERVIEW

On behalf of the Technical Program committee, we would like to welcome you to Québec City, for the 22nd edition of ICIP, the premier international conference in Image Processing. The whole team has put together a Technical Program that we hope you will find innovative and stimulating.

Once again this year, the international image community has mobilized for this event, and we have received 2,306 paper submissions. Submissions were received from all over the world, including 64 different countries, with roughly 48% from the Asia/Pacific region, 28% from Europe, the Middle East, and Africa, 19% from the USA and Canada, and 3% from Latin America. Each submitted paper has gone through a rigorous review process, conducted by a total of 1,111 expert volunteers. Collectively, they have produced 6,860 reviews. 57 Area Chairs managed this process; they are all well-known leaders in the areas covered by the conference, and several are members of the Signal Processing Society Technical Committees, and in particular the Image, Video, and Multidimensional Signal Processing TC, the Multimedia Signal Processing TC, the Bio Imaging and Signal Processing TC and the Information Forensics and Security TC. Based on the reviews collected, the Area Chairs have formulated recommendations for each of the submitted papers, which formed the basis for the final decisions made by the Technical Program Chairs.

This year, the Technical Program of ICIP will feature 1,098 presentations: 1,048 of them are regular papers (45% acceptance rate), 16 are presentations related to recently accepted IEEE Signal Processing Letters articles, and 34 will form the *Show & Tell* program. Among the regular papers, 62 will be grouped in 10 special sessions, which explore new and timely directions in the area of image processing. Overall, as an attendee, you will be offered a choice of 59 oral sessions and 126 poster sessions in which to learn about new research, interact with authors, and get inspired. A special mention must be made of the hard work carried out by the Awards Committee, under Awards Chair Phil Chou's leadership, for selecting amongst all these papers recipients for the Best Paper, Best Student Paper and Best Industry Paper Awards.

Putting together such a large program requires the efforts of many volunteers; we would like to take this opportunity to thank all the contributors to the review process and the

creation of the program: the reviewers, Area Chairs and Special Session organizers have all expended tremendous effort and worked with outstanding professionalism. Thanks to the dedication of these experts, ICIP 2015 will again propose a top-notch technical program, in keeping with its international reputation.

Plenary Chairs Kenneth Rose and Stéphane Coulombe have put together a set of three exciting plenary lectures. In these plenaries, world-leading researchers will present advances in specific topics of great interest to the ICIP community. On Monday morning, Yoshua Bengio from the University of Montreal will propose a talk on Deep Learning, a topic of incredible growing interest in image processing, as also attested by the record number of registrations for his tutorial on the same topic; then on Tuesday morning, Shree K. Nayar from the Columbia University will give his plenary talk on "Advances in Computational Imaging" and on Wednesday morning, Michael Unser from the École Polytechnique Fédérale de Lausanne, Switzerland, will give a lecture on "Challenges and Opportunities in Biological Imaging". The main conference program is preceded by 9 exciting tutorials selected by the Tutorials Chairs André Zaccarin and Janusz Konrad. These tutorials are meant as introductions to the state-of-the-art in key areas of image and video processing. Additionally, Special Session Chairs Éric Dubois and Oscar C. Au have gathered a program of 10 special sessions that focus on emerging areas of growing interest. The papers in the special sessions have all undergone peer review identical to that of the regular papers. Among these special sessions, the Industry Special Session will take place on Wednesday morning, where 14 posters will present applied research conducted in companies around the world. We hope that you take advantage of these special opportunities to open up to new and emerging topics. ICIP 2015 also features Show & Tell sessions that will be an opportunity to see live demonstrations of some of the new technologies being developed in academic and industrial laboratories. We have selected 34 presentations for 9 Show & Tell sessions that will take place all along the Conference.

To end this short message, as Technical Program Chairs, we must thank all the contributors that make a conference such as ICIP 2015 what it is: the plenary speakers, the tutorial presenters, the special session organizers, the reviewers, the session chairs, the Plenary, Tutorial, Special Session and Awards Chairs, the awards committees and all authors and presenters. Each individual's invaluable contribution adds up to deliver the quality of the conference that you will be attending. Special thanks go to our PCO *Conférium* for its excellent work.

We hope that you will enjoy ICIP 2015 and Quebec City!

Fabrice Labeau and Jean-Philippe Thiran
ICIP 2015 Technical Program Chairs

2016 IEEE International Conference on Image Processing

ICIP 2016

September 25-28, 2016 • Phoenix, Arizona, USA

New for ICIP 2016:

- maximize the visibility of your work via early free access: Papers accepted to ICIP 2016 will (upon author approval) be available on IEEE Xplore, ***freely accessible and downloadable by all*** in their final format from August 20, 2016 through September 30, 2016.
- nominate an individual or team for the Visual Innovation Award by March 31, 2016: The Visual Innovation Award was created to recognize pioneers of transformative technologies and business models in areas within the technical scope of the IEEE ICIP conference series.
- maximize the visibility of your work through reproducible research: ICIP 2016 supports reproducible research by allowing authors to submit supplementary material, including code and data.
- maximize your networking and career connections: attendees will be given the opportunity to upload their CVs to be shared among interested recruiters for full-time, part-time, and consulting job opportunities.
- experience state-of-the-art visual technology products and prototypes at the ICIP 2016 Visual Technology Showcase.

For more details on this and other new initiatives at ICIP 2016, visit **2016.ieeeicip.org** and connect on social media.

Important Deadlines: Challenge Session Proposals: October 30, 2015 | Special Session/Tutorial Proposals: November 16, 2015
Paper Submissions: **January 25, 2016** | Visual Innovation Award Nomination: March 31, 2016

Job Opportunities at Disney Research

Disney Research has a number of Fall, Spring and Summer internship positions available in our respective Computer Vision groups in Pittsburgh and Zurich. Candidates should be currently enrolled in a PhD program in Computer Science, or related discipline, have at least one publication in a top-tier vision conference, and have excellent written and oral communication skills.

We have opportunities for internships in a variety of fields in computer vision, including:

* Semantic image understanding
* Video sequence analysis and/or modeling
* Deep learning architectures
* Object detection and tracking
* Machine learning
* Light fields
* Vision for graphics
* Language and vision
* Activity and action recognition
* Pose estimation and tracking
* Face modeling, tracking and analysis
* Big visual data
* Image-based 3D reconstruction and rendering

Interested candidates should submit CVs to: careers@disneyresearch.com. For further information please contact Leonid Sigal (lsigal@disneyresearch.com) or Iain Matthews (iainm@disneyresearch.com) from Disney Research Pittsburgh, or Alexander Sorkine-Hornung (alex@disneyresearch.com) from the Disney Research lab in Zurich. Please use subject lines: DRP-CV-INTERN-2015 or DRZ-CV-INTERN-2015, respectively.

Disney Research labs provide a research foundation for the many business units within the Walt Disney Company. For example: Walt Disney Feature Animation, Walt Disney Imagineering, Parks & Resorts, Walt Disney Studios Motion Pictures, Disney Interactive, ESPN, Marvel, Industrial Light and Magic and Pixar Animation Studios. Disney Research has labs located in Pittsburgh, Zurich, Los Angeles and Boston.
The labs in Pittsburgh and Zurich are co-located with Carnegie Mellon University and ETH Zurich, respectively. Cast members are encouraged to interact with the established Computer Vision and Graphics groups at both Universities. As an active member of the research community we support and assist with publications at top venues.

TECHNICAL PROGRAM COMMITTEE MEMBERS

Technical Program Chairs

LABEAU, Fabrice, *McGill University*
THIRAN, Jean-Philippe, *EPFL*

Area Chairs

ALATAN, A. Aydin; *Middle East Technical University*
BAS, Erhan; *GE Global Research*
BOULGOURIS, Nikolaos; *Brunel University London*
BRANKOV, Jovan; *Illinois Institute of Technology*
CAMPISI, Patrizio; *Università degli Studi Roma Tre*
CETIN, Mujdat; *Sabanci University*
CHEUNG, Gene; *National Institute of Informatics*
CHEUNG, Sen-Ching Samson; *University of Kentucky*
COMESAÑA ALFARO, Pedro; *University of Vigo*
DE VLEESCHOUWE, Christophe; *Université catholique de Louvain*
DERRODE, Stéphane; *École Centrale, Lyon*
DOËRR, Gwenaël; *Technicolor*
DONG, Xu; *Nanyang Technological University*
ENGAN, Kjersti; *University of Stavanger*
FOI, Alessandro; *Tampere University of Technology*
FOWLER, James; *Mississippi State University*
GARCIA, Christophe; *INSA Lyon*
GUILLEMOT, Christine; *INRIA*
GULERYUZ, Onur; *Polytechnic University*
HIRAKAWA, Keigo; *University of Dayton*
KARAM, Lina; *Arizona State University*
KIYA, Hitoshi; *Tokyo Metropolitan University*

KOUAMÉ, Denis; *University Paul Sabatier*
LE CALLET, Patrick; *Université de Nantes*
LEE, Sanghoon; *Yonsei University*
LI, Xuelong; *Chinese Academy of Sciences*
LI, Zhu; *Samsung Research America*
LIN, Weisi; *Nanyang Technological University*
LU, Fang; *University of Science and Technology of China*
LU, Yue; *Harvard University*
MEI, Tao; *Microsoft Research*
MENEGAZ, Gloria; *University of Verona*
MRAK, Marta; *BBC R&D*
MUÑOZ BARRUTIA, Arrate; *Universidad Carlos III*
PANKANTI, Sharath; *IBM T J Watson Research*
PENG, Hanchuan; *Allen Institute for Brain Science*
PESQUET, Béatrice; *Telecom ParisTech*
RABBANI, Majid; *Eastman Kodak*
REIBMAN, Amy; *Purdue University*
ROSS, Arun; *Michigan State University*
ROYSAM, Badri; *University of Houston*
SCHELKENS, Peter; *Vrije Universiteit Brussel*
SHARMA, Gaurav; *University of Rochester*
SMOLIC, Aljoša; *Disney Research*
SRINIVASA, Gowri; *PESIT Bangalore South Campus*
STEINBACH, Eckehard; *Technical University of Munich*
SUN, Changming; *CSIRO*
TAN, Yap-Peng; *Nanyang Technological University*
TIAN, Qi; *University of Texas at San Antonio*
TONG, Zhang; *Hewlett-Packard Labs*
TOSIC, Ivana; *Ricoh Innovations*
TUBARO, Stefano; *Politecnico di Milano*
WINKLER, Stefan; *Advanced Digital Sciences Center*
WU, Feng; *University of Science and Technology of China*
YE, Jong Chul; *Korea Advanced Institute of Science & Technology*
ZHANG, Xiao-Ping; *Ryerson University*
ZOSSO, Dominique; *University of California Los Angeles*

SOCIAL EVENTS

Sunday, September 27

ICIP 2015 Welcome Reception at the Citadelle de Québec

The Citadelle of Québec is the largest British fortress in North America and Canada's oldest military building, dating back to 1693 and the French Regime. It is an integral part of the Québec fortifications and is located on Cape Diamond, the city's highest point. Its walls enclose 300 years of history from the time of New France until today. Known as the Gibraltar of the Americas due of its strategic location, the citadel was recognized as a National Historic Site of Canada in 1980 and is part of the Historic District of Old Québec, which was placed on UNESCO's World Heritage List in 1985.

Location :	The Citadelle de Québec (see directions below)
Date:	Sunday, September 27, 2015
Time:	19:00 – 22:00
Cost:	Free with registration. Please confirm attendance during registration **IMPORTANT:** pick your badge at registration desk beforehand
Dress code:	Casual, warm clothes for those wishing to explore a little

Directions:

- From the main entrance of the Québec City Convention Centre:
- Turn left towards Avenue Honoré-Mercier
- Turn right (uphill) on Honoré-Mercier towards Grande-Allée/Saint-Louis street
- Continue straight at the roundabout until you reach Grande-Allée/Rue-Louis
- Turn left on rue Saint-Louis
- Turn right on Côte de la Citadelle immediately after crossing the Saint-Louis gate
- Follow indications for ICIP 2015

Monday, September 28

Women in Signal Processing Luncheon

The IEEE Signal Processing Society is hosting the Women in Signal Processing (WISP) lunch reception at ICIP.

You are invited to attend the Women in Signal Processing lunch reception whose purpose is to foster support and offer networking opportunities by engaging women across the

signal processing profession to exchange ideas and experiences from academia, research and industry in an informal setting. The lunch reception is scheduled for Monday, 28 September 2015, from 12:30 to 14:00 at the Centre des Congrès de Quebec. Hors d›oeuvres will be served.

The WISP Luncheon is hosted by Dr. Rabab Ward, the IEEE Signal Processing Society's President Elect and features a presentation by Dr. Amy Reibman.

This event has a limited number of seats. Requests will be honored on a first-come first-served basis up to maximum capacity, Reserve your place while registering to the conference.

Rabab WARD Biography

Rabab Kreidieh Ward has around 40 years of experience in academic, education, research, development and leadership. Her main research interests are in broad areas of signal and image processing and their applications. She has published around 500 publications in refereed journals and conferences and book chapters, and holds six patents. Some of her work has been licensed to US and Canadian industry. She is a Fellow of the Royal Society of Canada, the IEEE, the Canadian Academy of Engineers and the Engineering Institute of Canada. Amongst her large number of awards are the UBC Senior Killam Mentoring Award and UBC Killam Research Prize. She has served and provided leadership to IEEE and other professional societies and is presently the President -Elect of the IEEE Signal Processing Society.

Amy REIBMAN Biography

Dr. Amy Riebman received her PhD degree in Electrical Engineering at Duke University in 1987. She worked at AT&T for 23 years, as the lead member of technical staff. She is currently a Professor at Purdue University. Her research interests include image and video quality estimation, video transport over networks, and video analytics. She was awarded IEEE Fellow in 2005 and served as a Distinguished Lecturer for the IEEE Signal Processing Society in 2009.

Location:	Room 206B, Québec City Convention Centre
Date:	Monday, September 28, 2015
Time:	12:30 – 14:00
Cost:	CAD 7
Host :	Dr. Rabab WARD
Presenter :	Dr. Amy REIBMAN

ICIP 2015 Banquet & Awards Ceremony

The Monday Banquet features a cocktail and dinner. Following dinner, the traditional Awards Ceremony will see the iconic Mrs. Lena Söderberg present the best student paper, best conference paper, best 3MT video, and the newly introduced best industry paper awards. The banquet will conclude on sensational entertainment offering a unique blend of participation, music and humor that shall make this banquet a memorable one.

Location:	Québec City Convention Centre
Date:	Monday, September 28, 2015
Time:	Cocktail : 19 :00 – 20:00
	Banquets 20:00 – 23:00
Cost:	CAD 150
Dress code:	Business or Business Casual

Tuesday, September 29

Get-Together Students-Employers Luncheon

The purpose of this lunch event is to provide opportunities for students to find a job or postdoctoral position, for industry employers to meet potential candidates, and for researchers to find postgrad students. The event will also provide networking opportunities and a forum of discussion between participants. Graduate students will be able to interact with senior researchers and to discuss their research and future career in an informal context.

Tables will be set up for companies, organizations or institutions to meet and interact with students. Food and refreshments will be served during the activity. The names of the organizations, institutions and companies attending this event will be publicized on this page.

This event has a limited number of seats. Requests will be honored on a first-come first-served basis up to maximum capacity. Students should reserve their place while registering. Employees and organizations should contact students@icip2015.org

Location:	Room 206B, Québec City Convention Centre
Date:	Tuesday, September 29, 2015
Time:	12:30 – 14:00
Cost:	Students CAD 20 after July 31, 2015 Employers Free for employers and researchers. Reserve your spot by contacting students@icip2015.org

Young Professionals Event

The IEEE Signal Processing Society (SPS) Young Professionals Subcommittee and the Quebec SPS/COM Chapter invite you to network with other young professionals and practicing engineers during an event in conjunction with ICIP 2015 in Quebec this September.

Join us on Tuesday, 29 September from 17:00 – 19:00 at the gorgeous National Assembly Library to discuss career advancement and professional development opportunities with fellow professionals and colleagues from all walks in an informal setting. Come unwind with some food and drink and connect with members of Quebec's local engineering community!

Please let us know whether you'd like to attend by completing the RSVP form no later than Tuesday, 22 September. The National Assembly Library is located at 1045 Rue des Parlementaires, Québec, QC, Canada.

If you have any questions about this event or other SPS events and activities, please contact SPS Membership and Content Administrator, Jessica Perry, at jessica.perry@ieee.org.

Location	The Québec National Assembly Library 1045 Rue des Parlementaires
Date	Tuesday, September 29, 2015
Time	17:00 – 19:00
Cost	Free (but reservation required by September 22, 2015)

PLENARY TALKS

Deep Learning

Yoshua Bengio

Professor, University of Montreal
Department of Computer Science and Operations Research
Canada Research Chair in Statistical Learning Algorithms

Abstract

Although neural networks have long been considered lacking in theory and much remains to be done, theoretical evidence is mounting and will be discussed, to support distributed representations, depth of representation, the non-convexity of the training objective, and the probabilistic interpretation of learning algorithms (especially of the auto-encoder type, which were lacking one). Empirical work in a variety of applications has demonstrated that, when well trained, such deep architectures can be highly successful, remarkably breaking through previous state-of-the-art in many areas, including speech recognition, object recognition, language models, and transfer learning. This talk will summarize the advances that have made these breakthroughs possible, and end with questions about some major challenges still ahead of researchers in order to continue our climb towards AI-level competence.

Biography

Yoshua Bengio received a PhD in Computer Science from McGill University, Canada in 1991. After two post-doctoral years, one at M.I.T. with Michael Jordan and one at AT&T Bell Laboratories with Yann LeCun and Vladimir Vapnik, he became professor at the Department of Computer Science and Operations Research at Université de Montréal. He is the author of two books and more than 300 publications, the most cited being in the areas of deep learning, recurrent neural networks, probabilistic learning algorithms, natural language processing and manifold learning. He is among the most cited Canadian computer scientists and is or has been associate editor of the top journals in machine learning and neural networks.

Since ‘2000 he holds a Canada Research Chair in Statistical Learning Algorithms, since ‘2006 an NSERC Industrial Chair, since ‘2005 his is a Fellow of the Canadian Institute for Advanced Research and since 2014 he co-directs its program focused on deep learning. He is on the board of the NIPS foundation and has been program chair and general chair for NIPS. He has co-organized the Learning Workshop for 14 years and co-created the new International Conference on Learning Representations.

His current interests are centered around a quest for AI through machine learning, and include fundamental questions on deep learning and representation learning, the geometry of generalization in high-dimensional spaces, manifold learning, biologically inspired learning algorithms, and challenging applications of statistical machine learning.

Advances in Computational Imaging

Shree K. Nayar

T. C. Chang Professor of Computer Science
Columbia University

Abstract

Computational imaging uses new optics to capture a coded image, and an appropriate algorithm to decode the captured image. This approach of manipulating images before there are recorded and processing recorded images before they are presented has three key benefits.

First, it enables us to implement imaging functionalities that would be difficult, if not impossible, to achieve using traditional imaging. Second, it can be used to significantly reduce the hardware complexity of an imaging system. Lastly, under appropriate imaging conditions, it allows us to break the limits of traditional imaging. In this talk, I will show recent examples of cameras that demonstrate these benefits.

Biography

Shree K. Nayar is the T. C. Chang Professor of Computer Science at Columbia University. He heads the Columbia Vision Laboratory (CAVE), which develops advanced computer vision systems. His research is focused on three areas - the creation of novel cameras that provide new forms of visual information, the design of physics based models for vision and graphics, and the development of algorithms for understanding scenes from images. His work is motivated by applications in the fields of digital imaging, computer graphics, robotics and human-computer interfaces.

Nayar received his PhD degree in Electrical and Computer Engineering from the Robotics Institute at Carnegie Mellon University. For his research and teaching he has received several honors including the David Marr Prize (1990 and 1995), the David and Lucile Packard Fellowship (1992), the National Young Investigator Award (1993), the NTT Distinguished Scientific Achievement Award (1994), the Keck Foundation Award for Excellence in Teaching (1995), the Columbia Great Teacher Award (2006), and the Carnegie Mellon Alumni Achievement Award (2009). For his contributions to computer vision and computational imaging, he was elected to the National Academy of Engineering in 2008, the American Academy of Arts and Sciences in 2011, and the National Academy of Inventors in 2014.

Challenges and Opportunities in Biological Imaging

Michael Unser

Professor, École Polytechnique Fédérale de Lausanne
Biomedical Imaging Group

Abstract

While the major achievements in medical imaging can be traced back to the end the 20th century, there are strong indicators that we have recently entered the golden age of cellular/biological imaging. The enabling modality is fluorescence microscopy which results from the combination of highly specific fluorescent probes (Nobel Prize 2008) and sophisticated optical instrumentation (Nobel Prize 2014). Modern microscopy centers are providing biologists with unprecedented amounts of data in 3D + time.

To address the computational aspects, two nascent fields have emerged in which image processing is expected to play a significant role. The first is "digital optics" where the idea is to combine optics with advanced signal processing in order to increase spatial resolution while reducing acquisition time. The second area is "bioimage informatics" which is concerned with the development of image analysis software to make microscopy more quantitative. The key issue here is reliable image segmentation as well as the ability to track structures of interest over time. We shall discuss specific examples and describe state-of-the-art solutions for bioimage reconstruction and analysis. This will help us build a list of challenges and opportunities to guide further research in bioimaging.

Biography

Michael Unser is professor and director of EPFL's Biomedical Imaging Group, Lausanne, Switzerland. His primary area of investigation is biomedical image processing. He is internationally recognized for his research contributions to sampling theory, wavelets, the use of splines for image processing, stochastic processes, and computational bioimaging. He has published over 250 journal papers on those topics. He is the author with P. Tafti of the book "An introduction to sparse stochastic processes", Cambridge University Press 2014.

From 1985 to 1997, he was with the Biomedical Engineering and Instrumentation Program, National Institutes of Health, Bethesda USA, conducting research on bioimaging.

Dr. Unser has held the position of associate Editor-in-Chief (2003-2005) for the IEEE Transactions on Medical Imaging. He is currently member of the editorial boards of SIAM J. Imaging Sciences, IEEE J. Selected Topics in Signal Processing, and Foundations and Trends in Signal Processing. He is the founding chair of the technical committee on Bio Imaging and Signal Processing (BISP) of the IEEE Signal Processing Society.

Prof. Unser is a fellow of the IEEE (1999), an EURASIP fellow (2009), and a member of the Swiss Academy of Engineering Sciences. He is the recipient of several international prizes including three IEEE-SPS Best Paper Awards and two Technical Achievement Awards from the IEEE (2008 SPS and EMBS 2010).

TUTORIALS

All tutorials are half-day long and will be held on Sunday, Sept. 27, 2015 in either the morning (TAM) or afternoon (TPM).

TAM-T1 (Invited) – Deep Learning in Image Processing and Vision

Instructors

Yoshua BENGIO and Roland MEMISEVIC, Université de Montréal, Canada

Classroom

206AB

Course Motivation and Description

Machine learning enables computers to learn about the world around us but also holds fundamentally hard challenges associated with the so-called curse of dimensionality: the huge number of possible observations, events, or configurations of variables. Deep learning has been introduced to face that challenge by adding to the rich science of machine learning the notion of deep representation, the idea that better models can be learned if the machine constructs and discovers rich and abstract representations of the data. Past and future advances in deep learning hold incredible promises of technological advances on the path towards AI. This realization has strongly influenced information technology markets recently and there are already impressive fallouts from these investments in science and technology.

This tutorial will cover some of the main current topics in deep learning research and applications, starting from the theoretical underpinnings of distributed representations and depth, as well as a detailed description of the most commonly used method for obtaining parameter gradients, i.e., the backpropagation algorithm. It will show how these ideas are incorporated in convolutional neural networks (for images) and recurrent neural networks (for capturing sequential structure). Although the deep learning breakthroughs started with unsupervised learning, most of the current applications have focused on supervised learning, as many challenges but also major promises remain, in the land of deep unsupervised learning. A brief introduction will be given to the current state-of-the-art in this area and how these ideas are motivated the point of view of geometry (manifold learning) and the discovery of underlying causal factors. The tutorial will close with the lighter subject of applications of deep learning in industry, with a focus on computer vision and image processing.

Course Outline

The course will cover the following aspects:

- Motivations for deep learning
- Theoretical underpinnings, distributed representations & depth
- Multi-layer networks and backpropagation
- Convolutional networks and recurrent neural networks
- Underlying factors, unsupervised learning and transfer learning
- Auto-encoders and deep generative models
- Applications to computer vision, speech and language understanding

Course Prerequisites

Undergraduate degree in mathematical sciences, or the equivalent.

Distributed Material

- Copy of the slides
- Free access to draft chapters of the Deep Learning book (MIT Press, to appear).

Bibliographies

Yoshua BENGIO (PhD in Computer Science, McGill University, 1991) did two post-docs at M.I.T. (Michael Jordan) and AT&T Bell Labs (Yann LeCun), then became professor at the Department of Computer Science and Operations Research at Université de Montréal. He authored two books and around 200 publications, the most cited being in the areas of deep learning, recurrent networks, probabilistic learning, natural language and manifold learning. He is among the most cited Canadian computer scientists and is or has been associate editor of the top journals in machine learning and neural networks. Since '2000 he holds a Canada Research Chair in Statistical Learning Algorithms, since '2006 an NSERC Industrial Chair, since '2005 is a Fellow of the Canadian Institute for Advanced Research. He is on the the NIPS foundation board and has been program chair and general chair for NIPS. He has co-organized the Learning Workshop for 14 years and co-created the new International Conference on Learning Representations. His current interests are centered around a quest for AI through machine learning, and include fundamental questions on deep learning and representation learning, the geometry of generalization in high-dimensional spaces, manifold learning, biologically inspired learning algorithms, and challenging applications of statistical machine learning.

Roland MEMISEVIC (PhD in Computer Science, University of Toronto, 2008) held positions as research scientist at PNYLab, Princeton, as post-doc at the University of Toronto and at ETH Zurich, and as a junior professor at the University of Frankfurt, Germany. In 2012, he joined the University of Montreal as an assistant professor in Computer Science. His research interests are in deep learning and computer vision with a focus on approaches that extend deep learning beyond object recognition towards more general tasks in vision and AI. His scientific contributions include approaches to learning motion and transformation patterns from images and videos, and approaches to learning invariance from data. He presented his work at conferences such as NIPS, CVPR, ICCV, ICML, AAAI, and in journals including PAMI, Neural Networks, Neural Computation. He served as a program committee member or reviewer for most of these and other conferences and journals in machine learning and computer vision. Roland Memisevic has been invited speaker at numerous deep learning events and tutorials.

TAM-T2 – HEVC/H.265 Video Coding Standard (v. 2) Including Range, Scalable, and Multiview Extensions

Instructors

Dan GROIS, Fraunhofer Heinrich Hertz Institute, Germany
Benjamin BROSS, Fraunhofer Heinrich Hertz Institute, Germany
Detlev MARPE, Fraunhofer Heinrich Hertz Institute, Germany
Karsten SUEHRING, Fraunhofer Heinrich Hertz Institute, Germany

Classroom

205C

Course Motivation and Description

The High-Efficiency Video Coding (HEVC) standard is the latest standard developed by a Joint Collaborative Team on Video Coding (JCT-VC), the first version of which was established by both ITU-T Video Coding Experts Group (VCEG) and the ISO/IEC Moving Pictures Expert Group (MPEG) in January, 2013. When compared to its predecessor, i.e. the H.264/MPEG-4 Advanced Video Coding (AVC) standard, H.265/MPEG-H HEVC allowed achieving dramatic bit-rate savings due to employing state-of-the-art technological achievements. H.265/MPEG-H HEVC was also especially designed for the High Definition (HD) as well as to the Ultra-High Definition (UHD) video content, which often refers to both 3840x2160 (4K) or 7680x4320 (8K) resolutions in terms of luma samples, the demand for which is expected to dramatically increase in the near future.

This tutorial will be focused on the second version of the HEVC video coding standard, which was officially issued in October 2014, further including the combined extensions: RExt – the range extensions, SHVC – the scalable extension, and MV-HEVC – the multiview extension.

First, the speakers will provide a brief overview of the H.264/MPEG-4 AVC standard, followed by a detailed overview of the HEVC coding tools, which led to such significant improvements in coding efficiency compared to H.264/MPEG-4 AVC (including the quadtree coding structure, intra/inter-prediction, in-loop filtering, high-level syntax, transform coding, entropy coding, parallel coding tools, etc.), further making a special emphasis on the compression efficiency and performance. Second, the speakers will give an overview on the HEVC extensions: particularly, the range extensions (including extended bit depth, chroma format support, etc.), the scalable extension (including the up-sampling process, inter-layer prediction process, etc.), and the multiview extension (including the inter-view prediction, etc.). Finally, this talk will be concluded by a discussion regarding further research directions and challenges.

Course Outline

- Brief review of H.264/MPEG-4 Advanced Video Coding (AVC) standard;
- H.265/MPEG-H HEVC version 1 standard;
- H.265/MPEG-H HEVC version 2 standard, including RExt – the Range Extensions, SHVC – the Scalable Extension, and MV-HEVC – the Multiview Extension.

Course Prerequisites

There are no course pre-requisites since the tutorial is aimed at an audience from very diverse backgrounds.

Distributed Material

Attendees will receive the slides presented during the tutorial.

Biographies

Dan GROIS received Ph.D. degree at the Communication Systems Engineering Department, Ben-Gurion University of the Negev (BGU), Israel, 2011. From 2011 to 2013, Dan was a Senior Researcher at the Communication Systems Engineering Department, BGU. Starting from the middle of 2013, Dan is a Post-Doctoral Senior Researcher at the Image Processing & Analytics Department of the Fraunhofer Institute for Telecommunications - Heinrich Hertz Institute (HHI), Germany. Dan is an author and co-author of about 40 publications in the area of image/video coding and data processing, which have been presented at top-tier international conferences, and published in various scientific journals, books, etc. In addition, Dan is a referee of top-tier conferences and international journals, such as the IEEE Trans. in Image Processing, IEEE Trans.

on Multimedia, IEEE Trans. on Signal Processing, Journal of Visual Comm. and Image Repres., Elsevier, IEEE Sensors, SPIE Optical Engineering, etc. In 2013, Dan also served as a Guest Editor of the SPIE Optical Engineering journal. During his academic carrier, Dan was granted various fellowships, including Kreitman Fellowships and the ERCIM Alain Bensoussan Fellowship, which was provided by the FP7 Marie Curie Actions COFUND Programme. In addition, Dan currently is a Fellow of the PROVISION ITN project, which is a part of the European Union's Marie Skłodowska-Curie Actions of the European Commission. Dan is a Senior Member of the IEEE, a Member of the ACM and SMPTE societies. Dan's research interests include image and video coding and processing, video coding standards, particularly H.265 | MPEG-H High-Efficiency Video Coding (HEVC), region-of-interest scalability, computational complexity and bit-rate control, network communication and protocols, and future multimedia applications/systems.

Benjamin BROSS is a Project Manager at the Image Processing & Analytics Department of the Fraunhofer Institute for Telecommunications - Heinrich Hertz Institute, Berlin and a part-time lecturer at the HTW University of Applied Sciences Berlin. He received the Dipl.-Ing. degree in electrical engineering from RWTH University Aachen, Germany in 2008. During his studies he was working on three-dimensional image registration in medical imaging and on decoder side motion vector derivation in H.264/MPEG-4 Advanced Video Coding (AVC). Since the development of the new H.265 | MPEG-H High-Efficiency Video Coding (HEVC) Standard, which started in 2010, Benjamin was very actively involved in the standardization process as a technical contributor and coordinator of core experiments. In July 2012, Benjamin was appointed as a co-chair of the editing Ad Hoc Group and became the chief editor of the HEVC video coding standard. At the Heinrich Hertz Institute, he is currently responsible for the development of HEVC conforming real-time encoders and decoders. Besides giving talks about the emerging HEVC video coding standard, Benjamin Bross is an author or co-author of several fundamental HEVC-related publications, and an author of two book chapters on HEVC and Inter-Picture Prediction Techniques in HEVC. He received the IEEE Best Paper Award at the 2013 IEEE International Conference on Consumer Electronics – Berlin in 2013 and the SMPTE Journal Certificate of Merit in 2014.

Detlev MARPE is Head of the Image Processing & Analytics Department and Head of the Image & Video Coding Group of the Fraunhofer Institute for Telecommunications - Heinrich Hertz Institute, Berlin. He is also active as a part-time lecturer at Technical University Berlin. He received the Dipl.-Math. degree from the Technical University of Berlin (TUB), Berlin, Germany and the Dr.-Ing. degree from the University of Rostock, Germany. For over a decade, he has successfully contributed to the standardization activities of ITU-T VCEG, ISO/IEC JPEG, and ISO/IEC MPEG for still image and video coding. During the development of the H.264 | MPEG-4 Advanced Video Coding (AVC) standard, he was chief architect of the CABAC entropy coding scheme as well as one of the main technical and editorial contributors to the so-called Fidelity Range Extensions (FRExt) with the addition of the High Profile in H.264 | MPEG-4 AVC. He was also one of the key people in designing the basic architecture of Scalable Video Coding (SVC) and Multiview Video Coding (MVC) as algorithmic and syntactical extensions of H.264 | MPEG-4 AVC. During the recent development of the H.265 | MPEG-H High-Efficiency Video Coding (HEVC) standard, he made significant contributions to the design of its fundamental building blocks. In addition, he also made successful proposals to the recent standardization of its Range Extensions and 3D Extensions. For his substantial contributions to the field of video coding, he received numerous awards, including, amongst many others, a nomination for the 2012 German Future Prize, the Karl Heinz Beckurts Award 2011, and two Emmy Engineering Awards in 2008 and 2009. Detlev Marpe is author or co-author of more than 200 publications in the area of video coding and signal processing,. He is an IEEE Fellow and Member of the German Information Technology Society. He also serves as an Associate Editor of the IEEE Transactions on Circuits and Systems for Video Technology. His current research interests include image and video coding, signal processing for communications as well as computer vision and information theory.

Karsten SUEHRING is a Project Manager at the Video Coding & Analytics Department of the Fraunhofer Institute for Telecommunications - Heinrich Hertz Institute. He received the Dipl.-Inf. (FH) degree in applied computer science from the University of Applied Sciences, Berlin, Germany, in 2001. Already as a student he was involved in MPEG standardization activities as maintainer of one of the reference implementations for MPEG-4 Part 2. When the JCT-VC was founded in 2001, has was appointed as coordinator of the JM reference software of H.264/MPEG-4 AVC. Since June 2011 he was chairing the JCT-VC ad-hoc group on software development and is one of the coordinators for the HM reference software for HEVC. His current research interests include coding and transmission of video and audio content, as well as software design and optimization. At the Heinrich Hertz Institute, he is currently responsible for the development of H.264/AVC and HEVC decoder test products.

TAM-T3 – Image Processing for Cinema

Instructors

Marcelo BERTALMÍO, Universitat Pompeu Fabra, Spain

Classroom

205B

Course Motivation and Description

This tutorial provides a detailed overview of the relevant image processing techniques that are used in practice in cinema, covering a wide range of topics showing how image processing has become ubiquitous in movie-making, from shooting to exhibition. It is intended primarily for advanced undergraduate and graduate students in applied mathematics, image processing, computer science and related fields, for researchers from academia, and also for professionals from the movie industry.

The tutorial does not deal with visual effects or computer-generated images, but rather with all the ways in which image processing algorithms are used to enhance, restore, adapt or convert moving images, their purpose being to make the images look as good as possible while exploiting all the capabilities of cameras, projectors and displays.

Current digital cinema cameras match or even surpass film cameras in color capabilities, dynamic range and resolution, and several of the largest camera makers have ceased production of film cameras. On the exhibition side, film has practically disappeared from American movie theaters. And while many mainstream and blockbuster movies are still being shot on film, they are all digitized for postproduction. Therefore, in this tutorial we will equate «cinema» with «digital cinema», considering only digital cameras and digital movies, and not discussing algorithms for problems that are inherent to film, like the restoration of film scratches or color fading.

The tutorial is structured in three parts. The first one covers some fundamentals on optics and color. The second part explains how cameras work and details all the image processing algorithms that are applied in-camera. The last part is devoted to image processing algorithms that are applied off-line in order to solve a wide range of problems, presenting state-of-the-art methods. The mathematical presentation of all methods will concentrate on their purpose and idea, leaving formal proofs and derivations for the interested reader in the cited references.

Course Outline

- Fundamentals on color, optics, photography;
- In-camera image processing: Image processing pipeline, Image sensors, Exposure control, Focus control, White balance, Color transformation, Gamma correction and quantization, Edge enhancement, Output formats;
- Noise and dynamic range: Classic denoising ideas, Non-local approaches, New trends and optimal denoising, High dynamic range imaging, Tone mapping;
- Color correction: Human color constancy, Computational color constancy under uniform illumination, Retinex and related methods, Cinema and colors at night, Color matching, Color stabilization;
- Image stabilization: Rolling shutter compensation, Compensation of camera motion;
- Zoom-In and Slow Motion;
- Gamut mapping: Color gamuts, Gamut reduction, Gamut extension, Validating a gamut mapping algorithm;
- In-painting: Video in-painting for specific problems, Video in-painting in a general setting, Video inpainting for stereoscopic 3D cinema.

Course Prerequisites

There are no course pre-requisites since the tutorial is aimed at an audience from very diverse backgrounds.

Distributed Material

Attendees will receive the slides presented during the tutorial.

Biographies

Marcelo BERTALMÍO received the Ph.D. degree in electrical and computer engineering from the University of Minnesota in 2001. He is an Associate Professor at Universitat Pompeu Fabra, Spain.

His publications total some 7,000 citations. He was awarded the 2012 SIAG/IS Prize of the Society for Industrial and Applied Mathematics of the USA (SIAM) for co-authoring the most relevant image processing work published in the period 2008-2012. Has received the Femlab Prize, the Siemens Best Paper Award, the Ramón y Cajal Fellowship, and the ICREA Academia Award, among other honors. He is an Associate Editor for SIAM-SIIMS and the secretary of SIAM's activity group on imaging. Has an ERC-Starting Grant for his project "Image processing for enhanced cinematography". Has written a book titled "Image Processing for Cinema", published by CRC Press / Taylor & Francis. Has directed two award-winning feature-length films.

His current research interests are in developing image processing algorithms allowing to shoot cinema with no more artificial lighting than what people present at the scene need to be able to see. The approach is to work out software methods mimicking neural processes in the human visual system, and apply them to images captured with a regular digital movie camera.

TAM-T5 – Visual saliency: Fundamentals, Applications, and Recent Progress

Instructors

Ali BORJI, University of Wisconsin-Milwaukee, USA
Neil D. B. BRUCE, University of Manitoba, Canada
Ming-Ming CHENG, Nankai University, China
Jian LI, National University of Defense Technology, China

Classroom

204B

Course Motivation and Description

Recently, visual saliency has received extensively growing attention across many disciplines including cognitive psychology, neurobiology, image processing, and computer vision. Based on our observed reaction times and estimated signal transmission times along biological pathways, human attention theories hypothesize that the human visual system processes only parts of an image in detail, with only limited processing of areas outside of the focus of attention. From an engineering perspective, such visual attention mechanisms have inspired a series of key research topics in the last few decades. One of the key forces behind these rapid developments is the vast amount of successful applications. These applications, marked by different requirements and points of emphasis have resulted in a rich kinship between fixation prediction, salient object detection, and objectness proposal generation.

It is noted that there has consistently been many papers about visual saliency appearing in ICIP over the past decade. While there are still many open issues and challenges (sometimes diverging arguments and debates) that need to be addressed in this area, the field of saliency computing continues to grow very rapidly. In this tutorial, we will introduce basic ideas, important models and applications of visual attention and saliency. Some key research issues will be discussed including top-down vs. bottom-up attention, and the relationship between fixation prediction, salient object detection, object proposal generation, etc. Recent advances in fixation prediction, salient object detection, and objectness proposals will be introduced in detail, with a significant emphasis on their respective potential applications. Finally, we will discuss the fairness of model evaluation criteria, model benchmarking, divergent opinions, open challenges, and potential future work.

Course Outline

This tutorial will consist of 5 talks (about 35-40 minutes for each talk). This begins with the fundamental knowledge and important classical models. Then, we discuss the divergence of, and correlation among different subareas (fixation prediction, salient object detection, and objectness proposals), followed by detailed introduction to each subarea. Finally, we discuss topics relating to model evaluation and benchmarking. The contents of the tutorial are as follows.

- Fundamentals of visual attention and saliency and some important models. [Dr. Bruce]
- Top-down vs. bottom-up attention, relationship between fixation predictions, salient object detection, object proposal generation, etc. [Dr. Borji]
- Recent advances in fixation prediction, evaluation metrics and ground truth, and potential applications. [Dr. Jian]

- Recent advances in salient object detection, and objectness proposals, and potential applications. [Dr. Cheng]
- The fairness of model evaluation criteria (for both fixation prediction and salient regions detection) and model benchmarking. [Dr. Borji]

Course Prerequisites

The attendee only needs to have basic knowledge of digital image processing in order to follow the course.

Distributed Material

All materials will be distributed to the attendees electronically via webpage downloads. No physical materials will be distributed.

Bibliographies

Ali BORJI received his B.S. and M.S. degrees in computer engineering from the Petroleum University of Technology, Tehran, Iran, 2001 and Shiraz University, Shiraz, Iran, 2004, respectively. He received his Ph.D. degree in computational neurosciences from the Institute for Studies in Fundamental Sciences (IPM) in Tehran, 2009. He then spent a year at University of Bonn as a postdoc. Before coming to the University of Wisconsin-Milwaukee in the fall of 2014, Dr. Borji was a postdoctoral scholar at iLab, University of Southern California, Los Angeles for four years.

Ming-Ming CHENG is an associate professor with College of Computer and Control Engineering, Nankai University. He received his PhD degree from Tsinghua University in 2012 under guidance of Prof. Shi-Min Hu, and working closely with Prof. Niloy Mitra. Then he worked as a research fellow for 2 years, working with Prof. Philip Torr in Oxford. Dr. Cheng's research primarily centers on algorithmic issues in image understanding and processing, including image segmentation, editing, retrieval, etc. During the past 5 years, he has published a serials of influential papers in several sub-areas of visual saliency modeling, including salient object detection (e.g. his CVPR 2011 paper has received 790+ citations), objectness estimation (e.g. his CVPR 2014 oral paper has received 70+ citations and 3000+ source code downloads), and visual saliency based applications (e.g. his SIGGRAPH Asia 2009 paper 'Sketch2Photo' has received 250+ citations, and been reported by 'The Telegraph' from UK and 'Spiegel' from Germany).

Neil D. B. BRUCE is an Assistant Professor at the University of Manitoba in Canada. His research interests include a variety of topics including both computer vision and human vision, image processing, visual attention, machine learning, computational neuroscience, information theory, sparse coding, 3D modeling and reconstruction, natural image statistics, and statistical and graphical models. Prior to joining the University of Manitoba he completed two post-doctoral fellowships, one at the Centre for Vision Research at York University, and the other at INRIA Sophia Antipolis. Previously, he completed a Ph.D. in the department of Computer Science and Engineering in 2008 as a member of the Centre for Vision Research at York University, Toronto, Canada. In 2003, he completed a M. A. Sc. in System Design Engineering at the University of Waterloo, and received an Honors B.Sc. with a double major in Computer Science and Mathematics from the University of Guelph in 2001.

Jian LI is an assistant professor with National University of Defense Technology. He received the B.E. degree, the M.E. degree and the PhD Degree from National University of Defense Technology (NUDT), Changsha, P.R. China. From Jan 2010 to Jan 2011, he was a visiting Ph.D. student (Academic Trainee) at Center for Intelligent Machines (CIM) in McGill University under the supervision of Prof. Martin Levine.

TPM-T1 (Invited) – Computational Photography

Instructors

Mohit GUPTA, Columbia University, USA
Jean-François LALONDE, Université Laval, Canada

Classroom

206AB

Course Motivation and Description

In the last decade, computational photography has emerged as a vibrant field of research. A computational camera uses a combination of unconventional optics and novel algorithms to produce images that cannot otherwise be captured with traditional cameras. The design of such cameras involves the following two main aspects:

- **Optical coding** – modifying the design of a traditional camera by introducing programmable optical elements and light sources to capture maximal amount of scene information in images;
- **Algorithm design** – developing algorithms that take information captured by conventional or modified cameras, and create a visual experience that goes beyond the capabilities of traditional systems.

Examples of computational cameras that are already making an impact in the consumer market include wide field-of-view cameras (Omnicam), light-field cameras (Lytro), high dynamic range cameras (mobile cameras), multispectral cameras, motion sensing cameras (Leap Motion) and depth cameras (Kinect).

This course serves as an introduction to the basic concepts in programmable optics and computational image processing needed for designing a wide variety of computational cameras, as well as an overview of the recent work in the field.

Course Outline

A brief history of photography – Camera Obscura – Film, Digital and Computational photography;

Coded photography – Novel camera designs and functionalities, including:

- Optical coding approaches: Aperture, Image plane, and Illumination coding; Camera arrays,
- Novel functionalities: Light field cameras – Extended DOF cameras, Hyperspectral cameras – Ultra high-resolution cameras (Gigapixel) – HDR cameras – Post-capture refocusing and Post-capture resolution trade-offs,
- Depth cameras: Structured light – Time-of-flight,
- Compressive sensing: Single pixel and High speed cameras;

Augmented photography: algorithmic tools for novel visual experiences:

- Multiple viewpoints: Image stitching, panoramas – Gigapixel imaging – Large-scale structure from motion,
- Data-driven approaches: Texture transfer – Object transfer – Color/attribute/style transfer,
- 2D image plane vs 3D scene: Scene geometry estimation – Light, geometry, and object editing,

- Smarter tools: Content-aware inpainting – Edit propagation in image collections – Matte cutouts,
- Smartphone photography: Cheap optics / powerful computing – Virtual tripod, Burst-mode HDR and denoising – Video stabilization,
- Motion magnification and visual microphone;

Future and impact of photography:

- «Social/collaborative photography» or the Internet of Cameras,
- Wearable and flexible cameras,
- Seeing the invisible: seeing around corners, through walls, laser speckle photography,
- Image forensics,
- Next generation applications (personalized health monitoring, robotic surgery, self-driving cars, astronomy).

Course Prerequisites

Basic knowledge of linear algebra and probability.

Distributed Material

Course PowerPoint / keynote slides.

Bibliographies

Jean-François LALONDE is an assistant professor in Electrical and Computer Engineering at Laval University, Quebec City. Previously, he was a Post-Doctoral Associate at Disney Research, Pittsburgh. He received a B.Eng. degree in Computer Engineering with honors from Laval University, Canada, in 2004. He earned his M.S at the Robotics Institute at Carnegie Mellon University in 2006 and received his Ph.D., also from Carnegie Mellon, in 2011. His Ph.D. thesis won the 2010-11 CMU School of Computer Science Distinguished Dissertation Award, and was partly supported by a Microsoft Research Graduate Fellowship. After graduation, he became a Computer Vision Scientist at Tandent, where he helped develop LightBrush™, the first commercial intrinsic imaging application, and introduced the technology of intrinsic videos at SIGGRAPH 2012. His work focuses on lighting-aware image understanding and synthesis by leveraging large amounts of data. More details about his research can be found here.

Mohit GUPTA will start as an assistant professor in the CS department at the University of Wisconsin-Madison in January '16. He is currently a research scientist in the CAVE lab at Columbia University. He received a B.Tech. in computer science from Indian Institute of Technology Delhi in 2003, an M.S. from Stony Brook University in 2005 and a Ph.D. from the Robotics Institute, Carnegie Mellon University in 2011. His research interests are in computer vision and computational imaging. His focus is on designing computational cameras that enable computer vision systems to perform robustly in demanding real-world scenarios, as well as capture novel kinds of information about the physical world. Details can be found here.

TPM-T2 – Example-based Super Resolution

Instructors

Jordi SALVADOR, Technicolor – Deutsche Thomson, Germany
Mehmet TÜRKAN, Technicolor, France & Izmir University of Economics, Turkey

Classroom

205C

Course Motivation and Description

Super Resolution has been one of the most popular research disciplines in image processing during the last years. From the research perspective, the reasons for this success include the interesting solutions to combinations of different image processing problems (registration, deblurring, denoising…) or the increasing understanding of the subspace of natural images and its proper application in recent statistical models. Besides, the introduction of new imaging standards with progressively higher resolutions favors the interest on new upscaling algorithms also in the industry. When properly designed, super-resolution methods are capable of adapting legacy contents to the resolution offered by the latest display technologies, either during postproduction or directly at the end user's devices, thus offering optimal visual experiences.

During the last years, research on example-based super resolution has received the main focus of attention essentially due to two reasons: In first place, in contrast with classic multi-frame super resolution, the use of more advanced image priors alleviates the requirement of having different captures of the same scene with subpixel shifts. Furthermore, numerical stability problems that might arise when reconstructing a super-resolved image under the commonly over-simplified parametric models in multi-frame super resolution are also avoided by using more meaningful non-parametric image priors.

This tutorial is designed to present an evolutionary timeline of the many existing and continuously improving state-of-the-art approaches that benefit from the favorable features of example-based super resolution, with insights on the theoretical background, implementation issues (including parallelization) and discussion on the practical applicability.

Course Outline

The tutorial provides a thorough introduction and overview of example-based super-resolution, covering the most successful algorithmic approaches, the theory behind them, implementation insights, and some hints about current challenges and expected outcomes for the near future. The list of covered topics is as follows.

Introduction to super resolution

This section introduces early (non-example-based) super-resolution pipelines and the rationale of the example-based concept covered by the rest of the tutorial.

- A historic view of super resolution
- Multi-frame super resolution
- Example-based super resolution

Self-similarity-based super resolution

This part of the tutorial describes super-resolution models where examples are learned from one or more scales of the input data. This strategy can be efficiently implemented when hardware solutions for block search are available, and has the nice property of being implicitly adaptive to the input contents.

- High-frequency transfer
- Locally linear embedding
- Robust self-similarity

Super resolution by external learning

This section will cover super-resolution strategies where larger amounts of data can be exploited to build suitable regression models during an offline training stage. These models can then be efficiently applied during the online inference stage. Under proper configurations, the generalizability of these machine-learning approaches can be virtually as high as that of self-similarity-based approaches and the reconstruction quality is often superior.

- Dictionaries
- Anchored neighbors and variations
- Hybrid models: self-similarity and regression
- Regression trees
- Deep learning

Course Prerequisites

The attendees should be familiar with basic concepts in image processing, probability and statistics (undergraduate courses suffice), but the tutorial is self-contained for the most part.

Distributed Material

All registered attendees shall receive a copy of of the supporting slides.

Bibliographies

Jordi SALVADOR is project leader at Technicolor R&I in Germany, where he started working in 2011, and member of Technicolor's Fellowship Network since 2014. His main research focus is on machine learning for example-based super resolution and image restoration. Formerly, he received a M.Sc. in Telecommunications (equivalent to Electrical) Engineering in 2006 and a M.Sc. in the European MERIT program in 2008, both from the Universitat Politècnica de Catalunya (UPC) in Barcelona. He obtained the Ph.D. degree in 2011, also from UPC, where he contributed to projects of the Spanish Science and Technology System (VISION, PROVEC) and to a European FP6 project (CHIL) as research assistant on multi-camera 3D reconstruction. He has also served as reviewer in conferences and journals like EUSIPCO and IEEE Transactions on Image Processing. His research interests include 3D reconstruction, real-time and parallel algorithms, new computer-human interfaces, image and video restoration, super resolution, inverse problems and machine learning.

Mehmet TÜRKAN is a researcher at Technicolor R&I in Cesson-Sévigné, France, since 2011. He will be joining the Engineering and Computer Science Faculty of Izmir University of Economics, Izmir, Turkey, in Sept 2015. He obtained his PhD degree in computer science from INRIA-Bretagne Atlantique- and University of Rennes 1, Rennes, France. He received his MSc and BSc (Hhons) degrees both in electrical and electronics engineering from Bilkent University, Ankara, and Eskisehir Osmangazi University, Eskisehir, Turkey, respectively. He was involved with the European Commission (EC) 6th Framework Program (FP6) Multimedia Understanding through Semantics, Computation and Learning Network of Excellence (MUSCLE-NoE), EC FP6 Integrated Three-Dimensional Television–Capture, Transmission, and Display Network of Excellence (3-DTV-NoE), and European UltraHD-4U research projects. His general research interests are in the area of signal processing with an emphasis on image and video processing and compression, pattern recognition and classification, and computer vision. Dr. Türkan was the recipient of the Best Student Paper Award in the 2010 IEEE International Conference on Image Processing (ICIP) and was a nominee for the Best Student Paper Award in the 2011 IEEE ICIP.

TPM-T3 – Perceptual Metrics for Image and Video Quality in a Broader Context: From Perceptual Transparency to Structural Equivalence

Instructors

Thrasyvoulos N. PAPPAS, Northwestern University, Evanston, Illinois, USA
Sheila S. HEMAMI, Northeastern University, Boston, Massachusetts, USA

Classroom

205B

Course Motivation and Description

We will examine objective criteria for the evaluation of image quality that are based on models of visual perception. Our primary emphasis will be on image fidelity, i.e., how close an image is to a given original or reference image, but we will broaden the scope of image fidelity to include structural equivalence. We will also discuss no-reference and limited-reference metrics. We will examine a variety of applications with special emphasis on image and video compression. We will examine near-threshold perceptual metrics, which explicitly account for human visual system (HVS) sensitivity to noise by estimating thresholds above which the distortion is just-noticeable, and supra-threshold metrics, which attempt to quantify visible distortions encountered in high compression applications or when there are losses due to channel conditions. We will also consider metrics for structural equivalence, whereby the original and the distorted image have visible differences but both look natural and are of equally high visual quality. We will also take a close look at procedures for evaluating the performance of quality metrics, including database design, models for generating realistic distortions for various applications, and subjective procedures for metric development and testing. Throughout the course, we will discuss both the state of the art and directions for future research.

This course will enable you to:

- Gain a basic understanding of the properties of the human visual system and how current applications (image and video compression, restoration, retrieval, etc.) that attempt to exploit these properties.
- Gain an operational understanding of existing perceptually-based and structural similarity metrics, the types of images/artifacts on which they work, and their failure modes.

- Understand current distortion models for different applications, and how they can be used to modify or develop new metrics for specific contexts.
- Understand the differences between sub-threshold and supra-threshold artifacts, the HVS responses to these two paradigms, and the differences in measuring that response.
- Understand criteria by which to select and interpret a particular metric for a particular application.
- Understand the capabilities and limitations of full-reference, limited-reference, and no-reference metrics, and why each might be used in a particular application.

Course Outline

- Applications: Image and video compression, restoration, retrieval, graphics, etc.
- Human visual system review
- Near-threshold perceptual quality metrics
- Supra-threshold perceptual quality metrics
- Structural similarity metrics
- Perceptual metrics for texture analysis and compression – structural texture similarity metrics
- No-reference and limited-reference metrics
- Models for generating realistic distortions for different applications
- Design of databases and subjective procedures for metric development and testing
- Metric performance comparisons, selection, and general use and abuse
- Embedded metric performance, e.g., for rate-distortion optimized compression or restoration
- Metrics for specific distortions, e.g., blocking and blurring
- Metrics for specific attributes, e.g., contrast, roughness, and glossiness
- Multimodal applications

Course Prerequisites

- Basic understanding of image compression algorithms
- Background in digital signal processing and basic statistics: frequency-based representations, filtering, distributions.
- Level: Intermediate

Distributed Material

PDF of PowerPoint presentation

Bibliographies

Thrasyvoulos N. PAPPAS received the S.B., S.M., and Ph.D. degrees in electrical engineering and computer science from MIT in 1979, 1982, and 1987, respectively. From 1987 until 1999, he was a Member of the Technical Staff at Bell Laboratories, Murray Hill, NJ. He is currently a professor in the Department of Electrical and Computer Engineering at Northwestern University, which he joined in 1999. His research interests are in image and video quality and compression, image and video analysis, content-based retrieval, perceptual

models for multimedia processing, model-based halftoning, and tactile and multimodal interfaces. Prof. Pappas will be serving as Vice-President Publications, IEEE Signal Processing Society (2015-107). He has served as editor-in-chief of the IEEE Transactions on Image Processing (2010-12), elected member of the Board of Governors of the Signal Processing Society of IEEE (2004-06), chair of the IEEE Image and Multidimensional Signal Processing (now IVMSP) Technical Committee, technical program co-chair of ICIP-01 and ICIP-09, and co-chair of the 2011 IEEE IVMSP Workshop on Perception and Visual Analysis. He has also served as co-chair of the 2005 SPIE/IS&T Electronic Imaging Symposium, and since 1997 he has been co-chair of the SPIE/IS&T Conference on Human Vision and Electronic Imaging. Dr. Pappas is a Fellow of IEEE and SPIE.

Sheila S. HEMAMI received the B.S.E.E. degree from the University of Michigan in 1990, and the M.S.E.E. and Ph.D. degrees from Stanford University in 1992 and 1994, respectively. She was with Hewlett-Packard Laboratories in Palo Alto, California in 1994 and was with the School of Electrical Engineering at Cornell University from 1995-2013. She is currently Professor and Chair of the Department of Electrical & Computer Engineering at Northeastern University in Boston, MA. Dr. Hemami's research interests broadly concern communication of visual information from the perspectives of both signal processing and psychophysics. She was elected a Fellow of the IEEE in 2009 for her for contributions to robust and perceptual image and video communications. Dr. Hemami has held various visiting positions, most recently at the University of Nantes, France and at École Polytechnique Fédérale de Lausanne, Switzerland. She has received numerous university and national teaching awards, including Eta Kappa Nu's C. Holmes MacDonald Award. She will be serving as Vice-President Publications Products and Services, IEEE (2015). She was a Distinguished Lecturer for the IEEE Signal Processing Society in 2010-11, was editor-in-chief for the IEEE Transactions on Multimedia from 2008-10. She has held various technical leadership positions in the IEEE.

TPM-T4 – Spectral Methods in 3D Data Analysis

Instructors

Michael BRONSTEIN, University of Lugano, Switzerland & Perceptual Computing, Intel

Classroom

205A

Course Motivation and Description

Over the last decade, the intersections between 3D shape analysis and image processing have become a topic of increasing interest in the computer graphics community. Nevertheless, when attempting to apply current image analysis methods to 3D shapes (feature-based description, registration, recognition, indexing, etc.) one has to face fundamental differences between images and geometric objects. Shape analysis poses new challenges that are non-existent in image analysis.

The purpose of this course is to overview the foundations of shape analysis and to formulate state-of-the-art theoretical and computational methods for shape description based on their intrinsic geometric properties. The emerging field of spectral and diffusion geometry provides a generic framework for many methods in the analysis of geometric shapes and objects. The course will present in a new light the problems of shape analysis based on diffusion geometric constructions such as manifold embeddings using the Laplace-Beltrami and heat operator, 3D feature detectors and descriptors, diffusion and commute-time metrics, functional correspondence, and spectral symmetry.

Course Outline

The course is divided in four sections, covering the topics listed below.

Theoretical foundations

Diffusion operators, their spectral properties, Fourier analysis on manifolds, similarities to the classical case – Heat diffusion equation on a Riemannian manifold – The Laplace-Beltrami operator – Diagonalization of Laplacians, relation to joint approximate diagonalization problems – The fundamental solution based on the heat kernel – The discrete heat operator and its basic algebraic properties – Scale-space and heat diffusion – The diffusion and the commute-time distances.

Shape representation

Manifold embedding using the heat operator – Relationship with Laplacian embedding and diffusion embeddings – Geometric and photometric diffusion – Local and global diffusion geometry – Feature detection and feature description – Heat and wave kernel signatures – Optimal spectral descriptors. Convolutional neural networks on manifolds – Volumetric vs surface diffusion.

Applications

Minimum-distortion similarity and correspondences – Functional correspondence, relation to sparse coding and matrix completion problems – Intrinsic symmetry detection – Shape retrieval, bag-of-feature methods – Benchmarks.

Implementation and application examples

Live demos in MATLAB to exemplify the main concepts of the tutorial.

Course Prerequisites

Basic knowledge of signal/image processing, Fourier analysis

Distributed Material

Course slides will be available online.

Bibliographies

Michael BRONSTEIN is a professor in the Faculty of Informatics at the University of Lugano (USI), Switzerland and a Research Scientist at the Perceptual Computing group, Intel, Israel. Michael got his B.Sc. in Electrical Engineering (2002) and Ph.D. in Computer Science (2007), both from the Technion, Israel. His main research interests are theoretical and computational methods in spectral and metric geometry and their application to problems in computer vision, pattern recognition, computer graphics, image processing, and machine learning. His research appeared in international media and was recognized by numerous awards. In 2012, Michael received the highly competitive European Research Council (ERC) grant. In 2014, he was invited as a Young Scientist to the World Economic Forum New Champions meeting, an honor bestowed on forty world's leading scientists under the age of 40. Besides academic work, Michael is actively involved in the industry. He was the co-founder of the Silicon Valley start-up company Novafora, where he served as VP of technology (2006-2009), responsible for the development of algorithms for large-scale video analysis. He was one of the principal inventors and technologists at Invision, an Israeli startup developing 3D sensing technology acquired by Intel in 2012 and released under the RealSense brand.

TPM-T5 – Sparse stochastic processes: A unifying statistical framework for modern image processing

Instructors

Michael UNSER, EPFL, Switzerland

Classroom

204B

Course Motivation and Description

Sparsity and compressed sensing are very popular topics in image processing. More and more, researchers are relying on the related l1-type minimization schemes to solve a variety of ill-posed problems in imaging. The paradigm is well established with a solid mathematical foundation, although the arguments that have been put forth in the past are mostly deterministic. In this tutorial, we shall introduce the participants to the statistical side of this story. As an analogy, think of the foundational role of Gaussian stationary processes: these justify the use of the Fourier transform or DCT and lend themselves to the formulation of MMSE/MAP estimators based on the minimization of quadratic functionals.

The relevant objects here are sparse stochastic processes (SSP), which are continuous-domain processes that admit a parsimonious representation in a matched wavelet-like basis. Thus, they exhibit the kind of sparse behavior that has been exploited by researchers in recent years for designing second-generation algorithms for image compression (JPEG 2000), compressed sensing, and the solution of ill-posed inverse problems (l1 vs. l2 minimization).

The construction of SSPs is based on an innovation model that is an extension of the classical filtered-white-noise representation of a Gaussian stationary process. In a nutshell, the idea is to replace 1) the traditional white Gaussian noise by a more general continuous-domain entity (Lévy innovation) and 2) the shaping filter by a more general linear operator. We shall present the functional tools for the complete characterization of these generalized processes and the determination of their transform-domain statistics. We shall also describe self-similar models (non-Gaussian variants of fBm) that are well suited for image processing.

We shall then apply those models to the derivation of statistical algorithms for solving ill-posed problems in imaging. This allows for a reinterpretation of popular sparsity-promoting processing schemes—such as total-variation denoising, LASSO, and wavelet shrinkage—as MAP estimators for specific types of SSPs. It also suggests novel alternative Bayesian recovery procedures that minimize the estimation error (MMSE solution). The concepts will be illustrated with concrete examples of sparsity-based image processing including denoising, deconvolution, tomography, and MRI reconstruction from non-Cartesian k-space samples.

Course Outline

Introduction

- Classical reconstruction algorithms and the Gaussian hypothesis
- Variational formulations: from l2- to l1-norm minimization
- Compressed sensing

Part I: Statistical modeling
An introduction to sparse stochastic processes

- Generalized innovation model
- Statistical characterization of signals

Part II: Recovery of sparse signals
Reconstruction of biomedical images

- Discretization of inverse problems
- Generic MAP estimator (iterative reconstruction algorithm)
- Applications: deconvolution microscopy, MRI, x-ray tomography

From MAP to MMSE estimation

- MMSE estimation of Markov processes
- Iterative wavelet-domain MMSE denoising

Course Prerequisites

Basic knowledge of statistical signal processing (MAP estimation), optimization techniques (iterative algorithms), and functional analysis (Fourier transform, generalized functions, differential equations)

Distributed Material

Copies of the slides
Complete lecture notes for the tutorial (and beyond) are available on the web at http://www.sparseprocesses.org

Bibliographies

Michael UNSER is Professor and Director of EPFL's Biomedical Imaging Group, Lausanne, Switzerland. His main research area is biomedical image processing. He has a strong interest in sampling theories, multiresolution algorithms, wavelets, the use of splines for image processing, and, more recently, stochastic processes. He has published about 250 journal papers on those topics. He is the leading author of "An introduction to sparse stochastic processes", Cambridge University Press, 2014.

From 1985 to 1997, he was with the Biomedical Engineering and Instrumentation Program, National Institutes of Health, Bethesda USA, conducting research on bioimaging and heading the Image Processing Group.

Dr. Unser is a fellow of the IEEE (1999), an EURASIP fellow (2009), and a member of the Swiss Academy of Engineering Sciences. He is the recipient of several international prizes including three IEEE-SPS Best Paper Awards and two Technical Achievement Awards from the IEEE (2008 SPS and EMBS 2010).

AWARDS

ICIP 2015 presents five types of awards and recognition that have been attributed to accepted papers after a careful selection process conducted by an experienced award committee:

- **Top 10% Paper Recognition**. Based on reviewer scores and recommendations, 127 papers have been specifically recognized as the "Top 10%" papers in ICIP 2015 based on the average score of all reviewers. These papers are identified by a ★ in the technical program.

- **Best Paper Award**. A panel of experts reviewed the top papers of ICIP 2015 as well as papers recommended by reviewers and Area Chairs. Based on these careful reviews, two papers were selected for the award of "Best Paper at ICIP 2015." The awards will be announced during the conference banquet.

- **Best Student Paper Awards.** The same panel of experts reviewed the same pool of top papers and selected three papers whose first author was a student at the time of submission. These papers will receive the award of "Best Student Paper at ICIP 2015" at the conference banquet.

- **Best Industry Paper Award**. In addition, a new Signal Processing Society level award will be established at ICIP 2015 for Best Industry Paper, for a paper whose primary authors are from industry. Industry will be broadly defined to include government and non-profit in addition to commercial entities. Judging will be based on general quality, novelty, maturity of the technology, and industrial impact of the described work.

- **Best Three-Minute Thesis (3MT) Video Contest.** Newly introduced at ICIP 2015, this award recognizes the academic, presentation, research communication skills and students' capacity to explain their research in a language appropriate to an educated but non-specialist audience.

SPS ADMINISTRATIVE MEETINGS

Sunday, Sept. 27

Welcome Reception	19:00-22:00	Room: La Citadelle

Monday, Sept. 28

Opening Ceremony	08:00-09:00	Room: 200AB
Image, Video, and Multidimensional Signal Processing Technical Committee Meeting	12:30-14:00	Room: 2105
Women in Signal Processing Luncheon	12:30-14:00	Room: 206B
Banquet Cocktail	19:00-20:00	Room: Foyer 2
Banquet	20:00-23:00	Room: 200AB

Tuesday, Sept. 29

IEEE Transactions on Computational Imaging Editorial Board Meeting	07:30-09:00	Room: 2105
Conference Board Executive Subcommittee Meeting	08:00-10:00	Room: 207
CISIG-L: Computational Imaging Special Interest Group Meeting	12:30-14:00	Room: 2105
ICIP to ICIP Meeting	12:30-14:00	Room: 207
Get-Together Students-Employers Luncheon	12:30-14:00	Room: 206B
SPS Young Professionals and Practicing Engineers Networking Event	17:00-19:00	Room: National Assembly Library
Publication Board Dinner	18:00-19:00	Room: 2104AB
Publication Board Meeting	19:00-23:00	Room: 2105

Wednesday, Sept. 30

Executive Committee Lunch	12:30-16:30	Room: 2105
IEEE Transactions on Image Processing Editorial Board Meeting	12:30-14:00	Room: 207
AE Best Practice Discussion	17:00-19:00	Room: 207
Conference Board Dinner	18:00-19:00	Room: 2101
Conference Board Meeting	19:00-23:00	Room: 2105

Thursday, Oct. 1

Board of Governors Breakfast	08:00-09:00	Room: 310
Board of Governors Meeting	09:00-17:00	Room: 311
Board of Governors Lunch	12:00-13:00	Room: 310

PROGRAM

SUNDAY
SEPTEMBER 27

TAM-T1: Deep Learning in Image Processing and Vision
Sunday, 09:00-12:30
Room: **206AB**

TUTORIAL
Session Chair(s): Janusz KONRAD, *Boston University*
André ZACCARIN, *Laval University*

TAM-T2: HEVC/H.265 Video Coding Standard (v. 2) Including Range, Scalable, and Multiview Extensions
Sunday, 09:00-12:30
Room: **205C**

TUTORIAL
Session Chair(s): Janusz KONRAD, *Boston University*
André ZACCARIN, *Laval University*

TAM-T3: Image Processing for Cinema
Sunday, 09:00-12:30
Room: **205B**

TUTORIAL
Session Chair(s): Janusz KONRAD, *Boston University*
André ZACCARIN, *Laval University*

TAM-T5: Visual saliency: Fundamentals, Applications, and Recent Progress
Sunday, 09:00-12:30
Room: **204B**

TUTORIAL
Session Chair(s): Janusz KONRAD, *Boston University*
André ZACCARIN, *Laval University*

TPM-T1: Computational Photography
Sunday, 13:30-17:00
Room: **206AB**

TUTORIAL
Session Chair(s): Janusz KONRAD, *Boston University*
André ZACCARIN, *Laval University*

TPM-T2: Example-based Super Resolution
Sunday, 13:30-17:00
Room: **205C**

TUTORIAL
Session Chair(s): Janusz KONRAD, *Boston University*
André ZACCARIN, *Laval University*

TPM-T3: Perceptual Metrics for Image and Video Quality in a Broader Context: From Perceptual Transparency to Structural Equivalence
Sunday, 13:30-17:00
Room: **205B**

TUTORIAL
Session Chair(s): Janusz KONRAD, *Boston University*
André ZACCARIN, *Laval University*

TPM-T4: Spectral Methods in 3D Data Analysis

Sunday, 13:30-17:00
Room: **205A**

TUTORIAL

Session Chair(s): Janusz KONRAD, *Boston University*
André ZACCARIN, *Laval University*

TPM-T5: Sparse Stochastic Processes: A unifying Statistical Framework for Modern Image Processing

Sunday, 13:30-17:00
Room: **204B**

TUTORIAL

Session Chair(s): Janusz KONRAD, *Boston University*
André ZACCARIN, *Laval University*

WLCM-E: Welcome Reception

Sunday, 19:00-22:00
Room: **LA CITADELLE DE QUÉBEC**

SOCIAL EVENT

Session Chair(s): Paul FORTIER, *Laval University*

MONDAY SEPTEMBER 28

PLE-N1: Plenary – Deep Learning

Monday, 09:00-10:00
Room: **200AB**

PLENARY

Session Chair(s): Stéphane COULOMBE, *École de technologie supérieure*
Kenneth ROSE, *University of California*

Presenter

Yoshua Bengio, *Professor, Department of Computer Science and Operations Research, University of Montreal; Canada Research Chair in Statistical Learning Algorithms*

Summary

Although neural networks have long been considered lacking in theory and much remains to be done, theoretical evidence is mounting and will be discussed, to support distributed representations, depth of representation, the non-convexity of the training objective, and the probabilistic interpretation of learning algorithms (especially of the auto-encoder type, which were lacking one). Empirical work in a variety of applications has demonstrated that, when well trained, such deep architectures can be highly successful, remarkably breaking through previous state-of-the-art in many areas, including speech recognition, object recognition, language models, and transfer learning. This talk will summarize the advances that have made these breakthroughs possible, and end with questions about some major challenges still ahead of researchers in order to continue our climb towards AI-level competence.

ARS-O4: Edge and Shape Models

Monday, 10:30-12:30
Room: **202**

LECTURE

Session Chair(s): Paul FIEGUTH, *University of Waterloo*

10:30 ARS-O4.1 – RECURSIVE ORIENTATION ESTIMATION BASED ON HYPERSURFACE RECONSTRUCTION
Salma DOGHRAJI, *IMS, UMR 5218*
Marc DONIAS, *IMS, UMR 5218*
Yannick BERTHOUMIEU, *IMS, UMR 5218*

10:50 ARS-O4.2 – PROBABILISTIC CONTINUOUS EDGE DETECTION USING LOCAL SYMMETRY
Gerald MWANGI, *University of Heidelberg*
Paul FIEGUTH, *University of Waterloo*
Christoph S. GARBE, *University of Heidelberg*

11:10 ★ARS-O4.3 – COMPLEX-VALUED HOUGH TRANSFORMS FOR CIRCLES
Marcelo CICCONET, *New York University*
Davi GEIGER, *New York University*
Michael WERMAN, *The Hebrew University of Jerusalem*

11:30 **ARS-04.4 –** STOCHASTIC MODEL FOR CURVILINEAR STRUCTURE RECONSTRUCTION USING MORPHOLOGICAL PROFILES
Seong-Gyun JEONG, *Inria*
Yuliya TARABALKA, *Inria*
Josiane ZERUBIA, *Inria*

11:50 ★ **ARS-04.5 –** ON THE ROLE OF NON-LOCAL MENGER CURVATURE IN IMAGE PROCESSING
Guy GILBOA, *Technion*
Eli APPLEBOIM, *Technion*
Emil SAUCAN, *Technion*
Yehoshua Y. ZEEVI, *Technion*

12:10 **ARS-04.6 –** ACTIVE SHAPE MODEL UNLEASHED WITH MULTI-SCALE LOCAL APPEARANCE
Qiang ZHANG, *University of Warwick*
Abhir BHALERAO, *University of Warwick*
Emma HELM, *University Hospitals Coventry and Warwickshire*
Charles HUTCHINSON, *University Hospitals Coventry and Warwickshire*

ARS-P27: Saliency I

Monday, 10:30-12:30
POSTER
Room: **POSTER D**

Session Chair(s): Patrick LE CALLET, *Polytech Nantes – Université de Nantes*

ARS-P27.1 – SALIENCY DETECTION WITH MULTI-SCALE SUPERPIXELS
Huchuan LU, *Dalian University of Technology*
Xiang RUAN, *Omron Corporation*

★ **ARS-P27.2 –** SALIENCY DETECTION USING A BACKGROUND PROBABILITY MODEL
Junling LI, *Communication University of China*
Fang MENG, *Communication University of China*
Yichun ZHANG, *China Art Science and Technology Institute*

★ **ARS-P27.3 –** STRUCTURED SALIENCY FUSION BASED ON DEMPSTERSHAFER THEORY
Xingxing WEI, *Tianjin University*
Zhiqiang TAO, *Tianjin University*
Changqing ZHANG, *Tianjin University*
Xiaochun CAO, *Tianjin University*

★ **ARS-P27.4 –** SALIENCY DETECTION USING TWO-STAGE SCORING
Yaqi LIU, *Beijing Technology and Business University*
Qiang CAI, *Beijing Technology and Business University*
Xiaobin ZHU, *Beijing Technology and Business University*
Jian CAO, *Beijing Technology and Business University*
Haisheng LI, *Beijing Technology and Business University*

★ **ARS-P27.5 –** A LOCATION-AWARE SCALE-SPACE METHOD FOR SALIENT OBJECT DETECTION
Dan XIANG, *Soochow University*
Baojiang ZHONG, *Soochow University*
Kai-Kuang MA, *Nanyang Technological University*

ARS-P34: Visual Content Analysis

Monday, 10:30-12:30
POSTER
Room: **POSTER A**

Session Chair(s): Sanghoon LEE, *Yonsei University*

ARS-P34.1 – LARGE VISUAL WORDS FOR LARGE SCALE IMAGE CLASSIFICATION
Sheng TANG, *Institute of Computing Technology, Chinese Academy of Sciences*
Hui CHEN, *Institute of Computing Technology, Chinese Academy of Sciences*
Ke LV, *University of Chinese Academy of Sciences*
Yongdong ZHANG, *Institute of Computing Technology, Chinese Academy of Sciences*

ARS-P34.2 – DYNAMIC TIME-ALIGNMENT K-MEANS KERNEL CLUSTERING FOR TIME SEQUENCECLUSTERING
Joseph SANTARCANGELO, *Ryerson University*
Xiao-Ping ZHANG, *Ryerson University*

ARS-P34.3 – EXEMPLAR BASED METRIC LEARNING FOR ROBUST VISUAL LOCALIZATION
Cedric LE BARZ, *THALES*
Nicolas THOME, *Sorbonne University UPMC LIP6*
Matthieu CORD, *Sorbonne University UPMC LIP6*
Stephane HERBIN, *ONERA*
Martial SANFOURCHE, *ONERA*

ARS-P34.4 – INDEXING FINGERPRINT DATABASE WITH MINUTIAE BASED COAXIAL GAUSSIAN TRACK CODE AND QUANTIZED LOOKUP TABLE
Kamlesh TIWARI, *Indian Institute of Technology Kanpur*
Phalguni GUPTA, *Indian Institute of Technology Kanpur*

ARS-P34.5 – T-CLUSTERING: IMAGE CLUSTERING BY TENSOR DECOMPOSITION
Amara TARIQ, *University of Central Florida*
Hassan FOROOSH, *University of Central Florida*

ARS-P41: Video Retrieval

Monday, 10:30-12:30
POSTER
Room: **POSTER B**

Session Chair(s): Jean-Philippe THIRAN, *EPFL*

ARS-P41.1 – FRAME-LEVEL MATCHING OF NEAR DUPLICATE VIDEOS BASED ON TERNARY FRAME DESCRIPTOR AND ITERATIVE REFINEMENT
Kyung-Rae KIM, *Korea University*
Won-Dong JANG, *Korea University*
Chang-Su KIM, *Korea University*

ARS-P41.2 – THE THU MULTI-VIEW FACE DATABASE FOR VIDEOCONFERENCES
Linhao DONG, *Tsinghua University*
Xiaoming TAO, *Tsinghua University*
Yang LI, *Tsinghua University*
Jichuan LU, *Tsinghua University*
Zizhuo ZHANG, *Tsinghua University*

ARS-P41.3 – TEMPORAL AGGREGATION FOR LARGE-SCALE QUERY-BY-IMAGE VIDEO RETRIEVAL
Andre ARAUJO, *Stanford University*
Jason CHAVES, *Stanford University*
Roland ANGST, *Stanford University*
Bernd GIROD, *Stanford University*

ARS-P41.4 – FAST OBJECT INSTANCE SEARCH IN VIDEOS FROM ONE EXAMPLE
Jingjing MENG, *Nanyang Technological University*
Junsong YUAN, *Nanyang Technological University*
Yap-Peng TAN, *Nanyang Technological University*
Gang WANG, *Nanyang Technological University*

ARS-P42: Saliency II

Monday, 10:30-12:30
POSTER
Room: **POSTER E**

Session Chair(s): Patrick LE CALLET, *Polytech Nantes – Université de Nantes*

ARS-P42.1 – SPARSE CODING-BASED SPATIOTEMPORAL SALIENCY FOR ACTION RECOGNITION
Tao ZHANG, *Shanghai Jiaotong University*
Wenjing JIA, *University of Technology, Sydney*
Long XU, *Shanghai Jiaotong University*
Pengfei SHI, *Shanghai Jiaotong University*
Jie YANG, *Shanghai Jiaotong University*

ARS-P42.2 – A VIDEO SALIENCY DETECTION METHOD BASED ON SPATIAL AND MOTION INFORMATION
Kang XUE, *Samsung R&C Institute China-Beijing*
Xiying WANG, *Samsung R&C Institute China-Beijing*

ARS-P42.3 – SALIENT OBJECT DETECTION USING NORMALIZED CUT AND GEODESICS
Keren FU, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Chen GONG, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Irene Yu-Hua GU, *Chalmers University of Technology*
Jie YANG, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Pengfei SHI, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*

★ **ARS-P42.4 –** VISUAL SALIENCY BY EXTENDED QUANTUM CUTS
Caglar AYTEKIN, *Tampere University of Technology*
Ezgi Can OZAN, *Tampere University of Technology*
Serkan KIRANYAZ, *Tampere University of Technology*
Moncef GABBOUJ, *Tampere University of Technology*

ARS-P42.5 – MULTI-SCALE SALIENCY OF 3D COLORED MESHES
Anass NOURI, *Université de Caen*
Christophe CHARRIER, *Université de Caen*
Olivier LEZORAY, *Université de Caen*

ARS-P42.6 – SALIENT OBJECT DETECTION FROM DISTINCTIVE FEATURES IN LOW CONTRAST IMAGES
Xin XU, *Wuhan University of Science and Technology*
Nan MU, *Wuhan University of Science and Technology*
Hong ZHANG, *Wuhan University of Science and Technology*
Xiaowei FU, *Wuhan University of Science and Technology*

ARS-P43: Saliency III

Monday, 10:30-12:30
POSTER
Room: **POSTER F**

Session Chair(s): Patrick LE CALLET, *Polytech Nantes – Université de Nantes*

ARS-P43.1 – SALIENCY MAP BASED IMPROVED SEGMENTATION
Prerana MUKHERJEE, *Indian Institute of Technology, Delhi, India*
Brejesh LALL, *Indian Institute of Technology, Delhi, India*
Archit SHAH, *Indian Institute of Technology, Delhi, India*

ARS-P43.2 – A SALIENCY MODEL FOR AUTOMATED TUMOR DETECTION IN BREAST ULTRASOUND IMAGES
Haoyang SHAO, *Harbin Institute of Technology*
Yingtao ZHANG, *Harbin Institute of Technology*
Min XIAN, *Utah State University*
Hengda CHENG, *Utah State University*
Fei XU, *Utah State University,*
Jianrui DING, *Harbin Institute of Technology*

ARS-P43.3 – SALIENT OBJECT CARVING
Avik HATI, *Indian Institute of Technology Bombay*
Subhasis CHAUDHURI, *Indian Institute of Technology Bombay*
Rajbabu VELMURUGAN, *Indian Institute of Technology Bombay*

ARS-P43.4 – ONE GAZE IS WORTH TEN THOUSAND (KEY-)WORDS
Stephanie LOPEZ, *University of Nice Sophia Antipolis (UNS)*
Arnaud REVEL, *University of La Rochelle*
Diane LINGRAND, *University of Nice Sophia Antipolis (UNS)*
Frederic PRECIOSO, *University of Nice Sophia Antipolis (UNS)*

ARS-P43.5 – SALIENT OBJECT DETECTION VIA OBJECTNESS MEASURE
Sai SRIVATSA R., *Indian Institute of Technology, Kharagpur*
Venkatesh Babu RADHAKRISHNAN, *Indian Institute of Science*

ARS-P43.6 – SALIENCY CUTS BASED ON ADAPTIVE TRIPLE THRESHOLDING
Shuzhen LI, *Nanjing University*
Ran JU, *Nanjing University*
Tongwei REN, *Nanjing University*
Gangshan WU, *Nanjing University*

ARS-P5: Content Summarization and Understanding

Monday, 10:30-12:30
POSTER Room: **POSTER C**

Session Chair(s): Amit ROY-CHOWDHURY, *University of California, Riverside*

ARS-P5.1 – A MULTI-VIEW VIDEO SYNOPSIS FRAMEWORK
Pankaj SA, *NIT Rourkela*
Ansuman MAHAPATRA, *NIT Rourkela*
Banshidhar MAJHI, *NIT Rourkela*

ARS-P5.2 – CASCADE OF CLASSIFIERS BASED ON BINARY, NON-BINARY AND DEEP CONVOLUTIONAL NETWORK DESCRIPTORS FOR VIDEO CONCEPT DETECTION
Foteini MARKATOPOULOU, *Centre for Research and Technology Hellas*
Vasileios MEZARIS, *Centre for Research and Technology Hellas*
Ioannis PATRAS, *Queen Mary University of London*

ARS-P5.3 – CO-REGULARIZED DEEP REPRESENTATIONS FOR VIDEO SUMMARIZATION
Olivier MORÈRE, *Université Pierre et Marie Curie*
Hanlin GOH, *Institute for Infocomm Research*
Antoine VEILLARD, *Université Pierre et Marie Curie*
Vijay CHANDRASEKHAR, *Institute for Infocomm Research*
Jie LIN, *Institute for Infocomm Research*

ARS-P5.4 – FACIAL IMAGE ANALYSIS BASED ON TWO-DIMENSIONAL LINEAR DISCRIMINANT ANALYSIS EXPLOITING SYMMETRY
Konstantinos PAPACHRISTOU, *Aristotle University of Thessaloniki*
Anastasios TEFAS, *Aristotle University of Thessaloniki*
Ioannis PITAS, *Aristotle University of Thessaloniki*

ARS-P5.5 – VIDEO SUMMARIZATION THROUGH CHANGE DETECTION IN A NON-OVERLAPPING CAMERA NETWORK
Shu ZHANG, *University of California, Riverside*
Amit ROY-CHOWDHURY, *University of California, Riverside*

COM-O1: High-efficiency Video Coding I

Monday, 10:30-12:30
LECTURE Room: **204A**

Session Chair(s): Onur GULERYUZ, *LG Electronics*

10:30 COM-O1.1 – HIGH THROUGHPUT PARALLEL SCHEME FOR HEVC DEBLOCKING FILTER
Alaa ELDEKEN, *Military Technical College*
Richard DANSEREAU, *Carleton University*
Mohamed FOUAD, *Military Technical College*
Gouda SALAMA, *Military Technical College*

10:50 COM-O1.2 – FAST CU SIZE DECISION AND PU MODE DECISION ALGORITHM IN HEVC INTRA CODING
Xiwu SHANG, *School of Communication and Information Engineering, Shanghai University*
Guozhong WANG, *School of Communication and Information Engineering, Shanghai University*
Tao FAN, *School of Communication and Information Engineering, Shanghai University*
Yan LI, *School of Communication and Information Engineering, Shanghai University*

11:10 **COM-01.3 –** TEXTURE BASED SUB-PU MOTION INHERITANCE FOR DEPTH CODING
Ying CHEN, *Qualcomm Technologies Inc.*
Hongbin LIU, *Qualcomm Technologies Inc.*
Xin ZHAO, *Qualcomm Technologies Inc.*

11:30 **COM-01.4 –** PALETTE MODE - A NEW CODING TOOL IN SCREEN CONTENT CODING EXTENSIONS OF HEVC
Yu-Chen SUN, *MediaTek Inc.*
Tzu-Der CHUANG, *MediaTek Inc.*
Polin LAI, *MediaTek USA Inc.*
Yi-Wen CHEN, *MediaTek Inc.*
Shan LIU, *MediaTek USA Inc.*
Yu-Wen HUANG, *MediaTek Inc.*
Shawmin LEI, *MediaTek Inc.*

11:50 ★ **COM-01.5 –** A NOVEL MOTION ESTIMATION ALGORITHM BASED ON QUADRATIC PREDICTION
Longfei GAO, *Peking University Shenzhen Graduate School*
Shengfu DONG, *Peking University Shenzhen Graduate School*
Wenmin WANG, *Peking University Shenzhen Graduate School*
Ronggang WANG, *Peking University Shenzhen Graduate School*
Wen GAO, *Peking University Shenzhen Graduate School*

12:10 **COM-01.6 –** BLOCK STRUCTURE REUSE FOR MULTI-RATE HIGH EFFICIENCY VIDEO CODING
Damien SCHROEDER, *Technische Universität München*
Patrick REHM, *Technische Universität München*
Eckehard STEINBACH, *Technische Universität München*

COM-P1: High-efficiency Video Coding II

Monday, 10:30-12:30
POSTER
Room: **POSTER 0**

Session Chair(s): Edson Mintsu HUNG, *Universidade de Brasília*

COM-P1.1 – RATE DISTORTION ANALYSIS OF HIGH DYNAMIC RANGE VIDEO CODING TECHNIQUES
Junaid MIR, *University of Surrey*
Anil FERNANDO, *University of Surrey*
Dumidu S. TALAGALA, *University of Surrey*
Hemantha KODIKARA ARACHCHI, *University of Surrey*

★ **COM-P1.2 –** CONTEXT ADAPTIVE MODE SORTING FOR FAST HEVC MODE DECISION
Saverio G. BLASI, *Queen Mary University of London*
Eduardo PEIXOTO, *Universidade de Brasilia*
Bruno MACCHIAVELLO, *Universidade de Brasilia*
Edson Mintsu HUNG, *Universidade de Brasilia*
Ivan ZUPANCIC, *Queen Mary University of London*
Ebroul IZQUIERDO, *Queen Mary University of London*

COM-P1.3 – FAST INTER MODE DECISION FOR HEVC BASED ON TRANSPARENT COMPOSITE MODEL
Nan HU, *University of Waterloo*
En-Hui YANG, *University of Waterloo*

COM-P1.4 – COPY MODE FOR STATIC SCREEN CONTENT CODING WITH HEVC
Thorsten LAUDE, *Leibniz Universität Hannover*
Jörn OSTERMANN, *Leibniz Universität Hannover*

ELI-O2: 3D Modeling and Reconstruction

Monday, 10:30-12:30
LECTURE Room: **205A**
Session Chair(s): Pascal VASSEUR, *LITIS, University of Rouen*

10:30 ELI-O2.1 – ENSEMBLE CLASSIFIER FOR JOINT OBJECT INSTANCE AND CATEGORY RECOGNITION ON RGBD DATA
Viktor SEIB, *University of Koblenz-Landau*
Raphael MEMMESHEIMER, *University of Koblenz-Landau*
Dietrich PAULUS, *University of Koblenz-Landau*

10:50 ELI-O2.2 – DCSLAM: A REAL-TIME SLAM WITH DYNAMIC CONSTRAINTS
Datta RAMADASAN, *institut pascal*
Marc CHEVALDONNÉ, *isit*
Thierry CHATEAU, *institut pascal*

11:10 ★ ELI-O2.3 – MOTION ESTIMATION FOR NON-OVERLAPPING CAMERAS BY IMPROVEMENT OF FEATURE POINTS MATCHING BASED ON URBAN 3D STRUCTURE
Atsushi KAWASAKI, *Graduate School of Science and Technology Keio university*
Hideo SAITO, *Graduate School of Science and Technology Keio university*
Kosuke HARA, *Denso IT Laboratory*

11:30 ELI-O2.4 – AUTOMATIC VIDEO TO POINT CLOUD REGISTRATION IN A STRUCTURE-FROM-MOTION FRAMEWORK
Esteban VIDAL, *Huawei Technologies Co. Ltd., European Research Center*
Nicola PIOTTO, *Huawei Technologies Co. Ltd., European Research Center*
Giovanni CORDARA, *Huawei Technologies Co. Ltd., European Research Center*
Francisco MORAN BURGOS, *Universidad Politecnica de Madrid*

11:50 ELI-O2.5 – 3D TRAJECTORY RECONSTRUCTION UNDER REFRACTION AT A CYLINDRICAL SURFACE
Byung-Kuk SEO, *Fraunhofer IGD*
Jungsik PARK, *Hanyang University*
Jong-il PARK, *Hanyang University*

12:10 ELI-O2.6 – ACCURATE SCALE ESTIMATION BASED ON UNSYNCHRONIZED CAMERA NETWORK
Rawia MHIRI, *LITIS insa de rouen université de rouen*
Pascal VASSEUR, *LITIS université de rouen*
Stéphane MOUSSET, *LITIS insa de rouen*
Rémi BOUTTEAU, *IRSEEM*
Abdelaziz BENSRHAIR, *LITIS insa de rouen*

ELI-P3: Color Imaging I

Monday, 10:30-12:30
POSTER
Room: **POSTER M**

Session Chair(s): Jiying ZHAO, *University of Ottawa*

ELI-P3.1 – A CLUSTERING CLASSIFICATION FRAMEWORK FOR COLOUR CONSTANCY
Bozhi LIU, *the University of Nottingham*
Guoping QIU, *the University of Nottingham*

ELI-P3.2 – COMPENSATION OF SPECTRAL MISMATCH TO ENHANCE WRGB DEMOSAICKING
Po-Hsun SU, *National Taiwan University*
Po-Chang CHEN, *Himax Imaging Inc*
Homer CHEN, *National Taiwan University*

ELI-P3.3 – REFLECTANCE ESTIMATION AND WHITE BALANCING USING MULTIPLE IMAGES
Ryo MATSUOKA, *The university of kitakyushu*
Tatsuya BABA, *The university of kitakyushu*
Masahiro OKUDA, *The university of kitakyushu*

★ **ELI-P3.4 –** SIMPLE EFFECTIVE IMAGE AND VIDEO COLOR CORRECTION USING QUATERNION DISTANCE METRIC
Soo-Chang PEI, *Graduate Institute of Communication Engineering, National Taiwan University*
Yu Zhe HSIAO, *Graduate Institute of Communication Engineering, National Taiwan University*

ELI-P3.5 – ADAPTIVE RESIDUAL INTERPOLATION FOR COLOR IMAGE DEMOSAICKING
Yusuke MONNO, *Tokyo Institute of Technology*
Daisuke KIKU, *Tokyo Institute of Technology*
Masayuki TANAKA, *Tokyo Institute of Technology*
Masatoshi OKUTOMI, *Tokyo Institute of Technology*

ELI-P12: Color Imaging II

Monday, 10:30-12:30
POSTER
Room: **POSTER N**

Session Chair(s): Jiying ZHAO, *University of Ottawa*

ELI-P12.1 – OPTIMIZATION OF COLOR QUANTIZATION WITH TOTAL LUMINANCE FOR DLP PROJECTOR AND ITS EVALUATION SYSTEM
Gou KOUTAKI, *Kumamoto University*
Hiroshi OKAJIMA, *Kumamoto University*
Nobutomo MATSUNAGA, *Kumamoto University*
Keiichi UCHIMURA, *Kumamoto University*

ELI-P12.2 – EFFICIENT NATURAL COLOR IMAGE DENOISING BASED ON GUIDED FILTER
Chia-Liang TSAI, *National Taiwan University*
Wei-Chih TU, *National Taiwan University*
Shao Yi CHIEN, *National Taiwan University*

ELI-P12.3 – INVERSE HALFTONING WITH GROUPING SINGULAR VALUE DECOMPOSITION
Jun YANG, *Sun Yat-sen University*
Jun GUO, *Sun Yat-sen University*
Hongyang CHAO, *Sun Yat-sen University*

★ **ELI-P12.4 –** ONE-FRAME DELAY FOR DYNAMIC PHOTOMETRIC COMPENSATION IN A PROJECTOR-CAMERA SYSTEM
Panagiotis-Alexandros BOKARIS, *LIMSI-CNRS, University of Paris-Sud*
Michèle GOUIFFÈS, *LIMSI-CNRS, University of Paris-Sud*
Christian JACQUEMIN, *LIMSI-CNRS, University of Paris-Sud*
Jean-Marc CHOMAZ, *LadHyX, CNRS, École Polytechnique*
Alain TRÉMEAU, *Laboratoire Hubert Curien, CNRS, Université Jean Monnet*

ELI-P12.5 – GRADIENT PRESERVING RGB-TO-GRAY CONVERSION USING RANDOM FOREST
Byeongju LEE, *Seoul National University*
Jongwon CHOI, *Seoul National University*
Kimin YUN, *Seoul National University*
Jin Young CHOI, *Seoul National University*

ELI-P12.6 – HYBRID KEY: AN AUTOMATIC TOOL FOR REAL-TIME HIGH QUALITY CHROMA KEYING
Ling YIN, *University of Ottawa, Canada*
Jiying ZHAO, *University of Ottawa, Canada*

NEW-O2: Image and Graphs

Monday, 10:30-12:30
LECTURE
Room: **204B**
Session Chair(s): Gene CHEUNG, *National Institute of Informatics*

10:30 NEW-O2.1 – DELAUNAY-SUPPORTED EDGES FOR IMAGE GRAPHS
Nicholas DAHM, *Griffith University*
Yongsheng GAO, *Griffith University*
Terry CAELLI, *University of Melbourne*
Horst BUNKE, *University of Bern*

10:50 ★ **NEW-O2.2 –** SPARSE CONCEPT DISCRIMINANT MATRIX FACTORIZATION FOR IMAGE REPRESENTATION
Meng PANG, *Dalian University of Technology*
Chuang LIN, *Dalian University of Technology*
Risheng LIU, *Dalian University of Technology*
Xin FAN, *Dalian University of Technology*
Jifeng JIANG, *Dalian University of Technology*

11:10 NEW-O2.3 – INTER-BLOCK CONSISTENT SOFT DECODING OF JPEG IMAGES WITH SPARSITY AND GRAPH-SIGNAL SMOOTHNESS PRIORS
Xianming LIU, *Harbin Institute of Technology*
Gene CHEUNG, *National Institute of Informatics*
Xiaolin WU, *McMaster University*
Debin ZHAO, *Harbin Institute of Technology*

11:30 NEW-O2.4 – BAG-OF-WORD BASED BRAND RECOGNITION USING MARKOV CLUSTERING ALGORITHM FOR CODEBOOK GENERATION
Yannick BENEZETH, *Université de Bourgogne*
Aurélie BERTAUX, *Université de Bourgogne*
Aldric MANCEAU, *Université de Bourgogne*

11:50 **NEW-02.5 –** ORTHO-DIFFUSION DECOMPOSITIONS FOR FACE RECOGNITION FROM LOW QUALITY IMAGES
Sravan GUDIVADA, *University of York*
Adrian BORS, *University of York*

SMR-01: Bio-inspired Modeling

Monday, 10:30-12:30
LECTURE Room: **203**
Session Chair(s): Peter TAY, *Western Carolina University*

10:30 **SMR-01.1 –** BIOLOGICALLY MOTIVATED SQUARE SPIRAL ARCHITECTURE FOR FAST VIDEO PROCESSING
Min JING, *University of Ulster*
Sonya COLEMAN, *University of Ulster*
Bryan SCOTNEY, *University of Ulster*
Martin MCGINNITY, *Nottingham Trent University*

10:50 **SMR-01.2 –** A VISUAL COMFORT ASSESSMENT METRIC FOR STEREOSCOPIC IMAGES
Feng QI, *Harbin Institute of Technology*
Xiaopeng FAN, *Harbin Institute of Technology*
Tingting JIANG, *Peking University*
Jian ZHANG, *Peking University*
Debin ZHAO, *Harbin Institute of Technology*

11:10 **SMR-01.3 –** A SIMPLE MODEL FOR ASSESSING THE ROLE OF CAMERA FRAME RATE IN MEASURING EYE MOVEMENT
Mehrdad SANGI, *University of Auckland*
Benjamin THOMPSON, *University of Auckland*
Cindy Xiaopeng GUO, *University of Auckland*
Jason TURUWHENUA, *University of Auckland*

11:30 **SMR-01.4 –** KNOWLEDGE AS ACTION: A COGNITIVE FRAMEWORK FOR INDOOR SCENE CLASSIFICATION
Rui WU, *Harbin Institute of Technology*
Zhipeng YE, *Harbin Institute of Technology*
Peng LIU, *Harbin Institute of Technology*
Xianglong TANG, *Harbin Institute of Technology*
Wei ZHAO, *Harbin Institute of Technology*

11:50 **SMR-01.5 –** BIOLOGICALLY INSPIRED DEEP STEREO MODEL
Qingqun KONG, *Institute of Automation, Chinese Academy of Sciences*
Yi ZENG, *Institute of Automation,Chinese Academy of Sciences*
Qiulei DONG, *National Laboratory of Pattern Recognition, Institute of Automation, Chinese Academy of Sciences*

12:10 **SMR-01.6 –** A CONJOINTLY WELL LOCALIZED QUADRATURE MIRROR FILTERBANK
Peter TAY, *Western Carolina University*

SMR-P1: Image Analysis and Synthesis

Monday, 10:30-12:30
POSTER Room: **POSTER J**

Session Chair(s): Hong MAN, *Stevens Institute of Technology*

SMR-P1.1 – LPI ADAPTIVE DESCREENING METHOD WITH HADAMARD DOMAIN ANAYSIS
Hyun-Seung LEE, *Samsung Electronics*
Ji-Young LEE, *Samsung Electronics*
Cho NAM IK, *Seoul National University*

SMR-P1.2 – A ROBUST NONSYMMETRIC STUDENTS-T FINITE MIXTURE MODEL FORMR IMAGE SEGMENTATION
Xu PAN, *School of Information Science & Engineering, East China University of Science and Technology*
Hongqing ZHU, *School of Information Science & Engineering, East China University of Science and Technology*
Qunyi XIE, *School of Information Science & Engineering, East China University of Science and Technology*

SMR-P1.3 – A MAP ESTIMATION FRAMEWORK FOR HDR VIDEO SYNTHESIS
Yuelong LI, *Pennsylvania State University*
Chul LEE, *The University of Hong Kong*
Vishal MONGA, *Pennsylvania State University*

SMR-P1.4 – LOCALITY SENSITIVE DICTIONARY LEARNING FOR IMAGE CLASSIFICATION
Baodi LIU, *China University of Petroleum*
Bin SHEN, *Purdue University*
Xue LI, *Tsinghua University*

SMR-P1.5 – INTERPRETING SPORTS TACTIC BASED ON LATENT CONTEXT-FREE GRAMMAR
Xingzhong XU, *Stevens Institute of Technology*
Hong MAN, *Stevens Institute of Technology*

SMR-P1.6 – NOTES ON IMAGE PROCESSING WITH PARTIAL DIFFERENTIAL EQUATIONS
Behzad KAMGAR-PARSI, *Office of Naval Research*
Behrooz KAMGAR-PARSI, *Naval Research Laboratory*
Kian KAMGAR-PARSI, *University of Michigan*

SMR-P6: Imaging Systems

Monday, 10:30-12:30
POSTER Room: **POSTER K**

Session Chair(s): Sanghoon LEE, *Yonsei University*

SMR-P6.1 – PARAMETER OPTIMISATION FOR VISION GUIDED TERRESTRIAL LOCOMOTION: MULTI-FRAME
Geoffrey DANIELS, *University of Bristol*
David BULL, *University of Bristol*
Jeremy BURN, *University of Bristol*

SMR-P6.2 – USING THE UNITY® GAME ENGINE AS A PLATFORM FOR ADVANCED REAL TIME CINEMA IMAGE PROCESSING
Timothée DE GOUSSENCOURT, *Solidanim*
Pascal BERTOLINO, *University Grenoble-Alpes*

SMR-P6.3 – COMPUTATIONAL 3D RECONSTRUCTION OF FAR AND BIG SIZE OBJECTS USING SYNTHETIC APETURE INTEGRAL IMAGING
Luyan XING, *Dalian University of Technology*
Yongri PIAO, *Dalian University of Technology*
Hongjia QU, *Dalian University of Technology*
Miao ZHANG, *Dalian University of Technology*

SMR-P6.4 – ROBUST LASER STRIPE EXTRACTION USING RIDGE SEGMENTATION AND REGION RANKING FOR 3D RECONSTRUCTION OF REFLECTIVE AND UNEVEN SURFACE
Jia DU, *Institute for Infocomm Research*
Wei XIONG, *Institute for Infocomm Research*
Wenyu CHEN, *Institute for Infocomm Research*
Jierong CHENG, *Institute for Infocomm Research*
Yue WANG, *Institute for Infocomm Research*
Ying GU, *Institute for Infocomm Research*
Shue Ching CHIA, *Institute for Infocomm Research*

SMR-P9: Texture Estimation and Classification

Monday, 10:30-12:30
POSTER
Room: **POSTER L**

Session Chair(s): Jana EHMANN, *LG Electronics*

SMR-P9.1 – DYNAMIC TEXTURES CLUSTERING USING A HIERARCHICAL PITMAN-YOR PROCESS MIXTURE OF DIRICHLET DISTRIBUTIONS
Wentao FAN, *Huaqiao University*
Nizar BOUGUILA, *Concordia University*

SMR-P9.2 – DENOISING OF NATURAL STOCHASTIC COLORED-TEXTURES BASED ON FRACTIONAL BROWNIAN MOTION MODEL
Ido ZACHEVSKY, *Technion - Israel Institute of Technology*
Yehoshua Y. ZEEVI, *Technion - Israel Institute of Technology*

SMR-P9.3 – ARFBF MODEL FOR NON STATIONARY RANDOM FIELDS AND APPLICATION IN HRTEM IMAGES
Zhangyun TAN, *LISTIC, University Savoy Mont Blanc*
Abdourrahmane ATTO, *LISTIC, University Savoy Mont Blanc*
Olivier ALATA, *Lab. Hubert Curien, Jean Monnet University of Saint-Étienne*
Maxime MOREAUD, *IFP Energies Nouvelles*

SMR-P9.4 – QUEST THE POTENTIAL OF SPATIAL TEXTURE FEATURES FOR DYNAMIC TEXTURE RECOGNITION
Feng YANG, *Wuhan University*
Gui-Song XIA, *Wuhan University*
Liangpei ZHANG, *Wuhan University*
Xin HUANG, *Wuhan University*

★ **SMR-P9.5 –** TEXTURE CLASSIFICATION USING UNIFORM ROTATION INVARIANT GRADIENT
Wenteng ZHAO, *Department of Electronic Engineering/Graduate School at Shenzhen, Tsinghua University*
Zongqing LU, *Department of Electronic Engineering/Graduate School at Shenzhen, Tsinghua University*
Qingmin LIAO, *Department of Electronic Engineering/Graduate School at Shenzhen, Tsinghua University*

SMR-P9.6 – MULTIVARIATE OPTIMIZATION FOR MULTIFRACTAL-BASED TEXTURE SEGMENTATION
Jordan FRECON, *Laboratoire de Physique de l'École Normale Supérieure de Lyon*
Nelly PUSTELNIK, *Laboratoire de Physique de l'École Normale Supérieure de Lyon*
Herwig WENDT, *IRIT*
Patrice ABRY, *Laboratoire de Physique de l'École Normale Supérieure de Lyon*

SNT-S1: Show & Tell I

Monday, 10:30-12:30
SHOW & TELL
Room: **SHOW & TELL**
Session Chair(s): Fabrice LABEAU, *McGill University*

SNT-S1.1 – USING GOOGLE GLASS TO ASSIST INDIVIDUALS WITH AUTISM IN JOB INTERVIEWS
Sen-Ching Samson CHEUNG, *University of Kentucky*
Neelkamal SOARES, *Geisinger Health System*
The proposed demonstration is an application on Google Glass platform called LittleHelper to assist individuals with ASD in maintaining appropriate eye contact and speech volume during a social communication between two individuals, typical in a job interview.

SNT-S1.2 – ANTI-COLLUSION VIDEO WATERMARKING WITH REAL-TIME FALSE ALARM PROBABILITIES.
Gaetan LE GUELVOUIT, *B-Com, Digital Trust & Identity Labs*
Valérie DENIS, *B-COM*
Teddy FURON, *B-Com, INRIA*
Forensic watermarking aims at embedding a unique identifier within each copy a video. Its typical use case is the fight against piracy, helping the identification of indelicate customers or traitors in the video processing chain. In this context, we plan to demonstrate our video forensic solution, named Ultra Marker. It provides an ultra-robust video watermarking algorithm and an anti-collusion codes generator and detector. The watermarking part of the solution has been designed to optimize the trade-off between robustness, visual transparency and security

SNT-S1.3 – INTERACTIVE MAX-TREE VISUALIZATION TOOL FOR IMAGE PROCESSING AND ANALYSIS
Luis TAVARES, *University of Campinas*
Roberto SOUZA, *University of Campinas*
Letícia RITTNER, *University of Campinas*
Rubens MACHADO, *CTI, Campinas*
Roberto LOTUFO, *University of Campinas*
The max-tree is a data structure that represents all possible upper thresholds of an image. We propose a methodology that allows building an interactive max-tree graphical representation that permits the user to navigate through the max-tree nodes, to visualize its connected components and to create node subsets.

SS3-O1: Color Imaging and Applications

Monday, 10:30-12:30
LECTURE
Room: **205B**

Session Chair(s): Christophe CHARRIER, *University of Caen Basse Normandie*
Christine FERNANDEZ-MALOIGNE, *University of Poitiers*
Marius PEDERSEN, *Gjøvik University College*

10:30 **SS3-O1.1 –** TEXTURE CLASSIFICATION WITH FUZZY COLOR CO-OCCURRENCE MATRICES
Audrey LEDOUX, *Laboratoire CRIStAL (UMR CNRS 9189), Université de Lille*
Olivier LOSSON, *Laboratoire CRIStAL (UMR CNRS 9189), Université de Lille*
Ludovic MACAIRE, *Laboratoire CRIStAL (UMR CNRS 9189), Université de Lille*

10:50 **SS3-O1.2 –** EVALUATION OF 60 FULL-REFERENCE IMAGE QUALITY METRICS ON THE CID:IQ
Marius PEDERSEN, *Gjøvik University College*

11:10 **SS3-O1.3 –** COLOR DECORRELATION HELPS VISUAL SALIENCY DETECTION
Boris SCHAUERTE, *Karlsruhe Instiute of Technology / Eyezag*
Torsten WÖRTWEIN, *Karlsruhe Instiute of Technology*
Rainer STIEFELHAGEN, *Karlsruhe Instiute of Technology*

11:30 **SS3-O1.4 –** ELLIPTICAL MONOGENIC REPRESENTATION OF COLOR IMAGES AND LOCAL FREQUENCY ANALYSIS
Raphael SOULARD, *University of Poitiers*
Philippe CARRÉ, *University of Poitiers*

11:50 ★ **SS3-O1.5 –** MULTIVALUED LABEL DIFFUSION FOR SEMI-SUPERVISED SEGMENTATION
Pierre BUYSSENS, *Greyc*
Olivier LEZORAY, *Greyc*

12:10 **SS3-O1.6 –** SCENE STATISTICS OF AUTHENTICALLY DISTORTED IMAGES IN PERCEPTUALLYRELEVANT COLOR SPACES FOR BLIND IMAGE QUALITY ASSESSMENT
Deepti GHADIYARAM, *The University of Texas at Austin*
Alan BOVIK, *The University of Texas at Austin*

TEC-O4: Image Reconstruction

Monday, 10:30-12:30
LECTURE
Room: **205C**

Session Chair(s): Marcelo V. W. ZIBETTI, *Universidade Tecnológica Federal do Paraná*

10:30 **TEC-O4.1 –** DESIRE: DISCONTINUOUS ENERGY SEAM CARVING FOR IMAGE RETARGETING VIA STRUCTURAL AND TEXTURAL ENERGY FUNCTIONALS
Akshaya MISHRA, *University of Waterloo*
Christian SCHARFENBERGER, *University of Waterloo*
Parthipan SIVA, *University of Waterloo*
Fan LI, *University of Waterloo*
Alexander WONG, *University of Waterloo*
David CLAUSI, *University of Waterloo*

10:50 **TEC-O4.2 –** ROTATIONALLY-INVARIANT NON-LOCAL MEANS FOR IMAGE DENOISING AND TOMOGRAPHY
Suhas SREEHARI, *Purdue University*
S. V. VENKATAKRISHNAN, *Lawrence Berkeley National Laboratory*
Lawrence DRUMMY, *Air Force Research Laboratory*
Jeffrey SIMMONS, *Air Force Research Laboratory*
Charles BOUMAN, *Purdue University*

11:10 **TEC-O4.3 –** NEURAL NETWORK BASED X-RAY TOMOGRAPHY FOR FAST INSPECTION OF APPLES ON A CONVEYOR BELT SYSTEM
Eline JANSSENS, *University of Antwerp*
Jan DE BEENHOUWER, *University of Antwerp*
Mattias VAN DAEL, *KULeuven*
Pieter VERBOVEN, *KU Leuven*
Bart NICOLAI, *KU Leuven*
Jan SIJBERS, *University of Antwerp*

11:30 **TEC-O4.4 –** DISTRIBUTED COMPRESSED SENSING FOR PHOTO-ACOUSTIC IMAGING
K J FRANCIS, *Indian Institute of Technology Hyderabad*
Sumohana CHANNAPPAYYA, *Indian Institute of Technology Hyderabad*
P RAJALAKSHMI, *Indian Institute of Technology Hyderabad*

11:50 **TEC-O4.5 –** PARTIALLY DISCRETE MAGNETIC RESONANCE TOMOGRAPHY
Gabriel RAMOS-LLORDÉN, *iMinds-Vision Lab, University of Antwerp*
Hilde SEGERS, *iMinds-Vision Lab, University of Antwerp*
Willem JAN PALENSTIJN, *iMinds-Vision Lab, University of Antwerp*
Arnold Jan DEN DEKKER, *iMinds-Vision Lab, University of Antwerp*
Jan SIJBERS, *iMinds-Vision Lab, University of Antwerp*

12:10 ★ **TEC-O4.6 –** ACCELERATING THE OVER-RELAXED ITERATIVE SHRINKAGE-THRESHOLDING ALGORITHMS WITH FAST AND EXACT LINE SEARCH FOR HIGH RESOLUTION TOMOGRAPHIC IMAGE RECONSTRUCTION
Marcelo V. W. ZIBETTI, *UTFPR*
Elias HELOU, *USP*
Eduardo MIQUELES, *LNLS*
Alvaro DE PIERRO, *CNPq*

TEC-P26: Tomography

Monday, 10:30-12:30
POSTER
Room: **POSTER H**

Session Chair(s): Rabab WARD, *University of British Columbia*

★ **TEC-P26.1 –** FACTOR GRAPHS FOR INVERSE PROBLEMS: ACCELERATED PHASE CONTRAST MAGNETIC RESONANCE IMAGING
Adam RICH, *The Ohio State University*
Lee POTTER, *The Ohio State University*
Joshua ASH, *The Ohio State University*
Rizwan AHMAD, *The Ohio State University*

TEC-P26.2 – MR IMAGE RECONSTRUCTION OF A REGULARLY UNDERSAMPLED SIGNAL USING QUADRATIC PHASE SCRAMBLING
Satoshi ITO, *Utsunomiya University*
Shungo YASAKA, *Utsunomiya University*
Yoshifumi YAMADA, *Utsunomiya University*

TEC-P26.3 – ANGULAR UPSAMPLING OF PROJECTION MEASUREMENTS IN 3D COMPUTED TOMOGRAPHY USING A SPARSITY PRIOR
Davood KARIMI, *University of British Columbia*
Rabab WARD, *University of British Columbia*
Nancy FORD, *University of British Columbia*

TEC-P26.4 – TOMOGRAPHIC IMAGE RECONSTRUCTION WITH A SPATIALLY VARYING GAUSSIAN MIXTURE PRIOR
Katerina PAPADIMITRIOU, *University of Ioannina*
Christophoros NIKOU, *University of Ioannina*

★ **TEC-P26.5 –** LEARNING SPACE-TIME DICTIONARIES FOR BLIND COMPRESSED SENSING DYNAMIC MRI RECONSTRUCTION
Angshul MAJUMDAR, *IIITD*
Rabab WARD, *UBC*

TEC-P33: Motion Estimation, Restoration and Superresolution

Monday, 10:30-12:30
POSTER Room: **POSTER G**
Session Chair(s): Majid RABBANI, *Eastman Kodak*

TEC-P33.1 – ON SPATIAL NEIGHBOURHOOD OF PATCH-BASED SUPER RESOLUTION
Neeraj KUMAR, *Indian Institute of Technology Guwahati*
Amit SETHI, *Indian Institute of Technology Guwahati*

TEC-P33.2 – COLOR DEFLICKERING FOR HIGH-SPEED VIDEO IN THE PRESENCE OF ARTIFICIALLIGHTING
Ali KANJ, *Université Paris-Est, Laboratoire d'informatique Gaspard Monge*
Hugues TALBOT, *Université Paris-Est, Laboratoire d'informatique Gaspard Monge*
Jean-Christophe PESQUET, *Université Paris-Est, Laboratoire d'informatique Gaspard Monge*
Raoul RODRIGUEZ LUPARELLO, *Sublab Production*

TEC-P33.3 – ILLUMINATION ROBUST OPTICAL FLOW ESTIMATION BY ILLUMINATION-CHROMATICITY DECOUPLING
Sungheon PARK, *Seoul National University*
Nojun KWAK, *Seoul National University*

★ **TEC-P33.4 –** KERNEL-BASED FACE HALLUCINATION VIA DUAL REGULARIZATION PRIORS
Jingang SHI, *Xi'an Jiaotong University*
Chun QI, *Xi'an Jiaotong University*

TEC-P33.5 – FIREFLY: A HARDWARE-FRIENDLY REAL-TIME LOCAL BRIGHTNESS ADJUSTMENT METHOD
Nikola BANIC, *University of Zagreb Faculty of Electrical Engineering and Computing*
Sven LONCARIC, *University of Zagreb Faculty of Electrical Engineering and Computing*

TEC-P33.6 – DENOISING-BASED IMAGE RECONSTRUCTION FROM PIXELS LOCATED AT NON-INTEGER POSITIONS
Jan KOLODA, *Friedrich-Alexander University (FAU)*
Jürgen SEILER, *Friedrich-Alexander University (FAU)*
André KAUP, *Friedrich-Alexander University (FAU)*

MATL-W: Industry Workshop: Matlab Today

Monday, 12:30-14:00
WORKSHOP
Room: **206A**
Session Chair(s): André MORIN, Optelis
Jean-Luc DUGELAY, Eurecom

Summary
MATLAB® has been on a fast track recently, delivering many significant improvements that will affect all aspects of your technical computing work. Come hear the latest from a MathWorks engineer with more than 20 years of experience developing MATLAB and Image Processing Toolbox™. Learn more about:

- *The new graphics system – an updated look and easier interaction*
- *The new default MATLAB color map – why we changed it and how we designed it*
- *New math, image processing, and computer vision algorithms – for your prototyping and research*
- *New software developer tools – for managing your code*
- *Improved performance – for tackling bigger problems faster*

Presenter
Steve Eddins, Senior MATLAB Designer for Language Evolution, MathWorks

WISP-L: Women in Signal Processing Lunch

Monday, 12:30-14:00
LUNCH
Room: **206B**
Session Chair(s): Rabab WARD, *Signal Processing Society*

ARS-O1: Classification I

Monday, 14:00-16:00
LECTURE
Room: **204A**
Session Chair(s): B.S. MANJUNATH, *University of California at Santa Barbara*

14:00 ARS-O1.1 – STATISTICAL HYPOTHESIS TEST FOR ROBUST CLASSIFICATION ON THE SPACE OF COVARIANCE MATRICES
Ioana ILEA, *Université de Bordeaux, Laboratoire IMS, Groupe Signal et Image; Technical University of Cluj-Na*
Lionel BOMBRUN, *Université de Bordeaux, Laboratoire IMS, Groupe Signal et Image*
Christian GERMAIN, *Université de Bordeaux, Laboratoire IMS, Groupe Signal et Image*
Romulus TEREBES, *Technical University of Cluj-Napoca*
Monica BORDA, *Technical University of Cluj-Napoca*

14:20 **ARS-01.2 –** MULTIPLE FEATURES EXTRACTION FOR TIMBER DEFECTS DETECTION AND CLASSIFICATION USING SVM
Mohamad Mazen HITTAWE, *Le2i*
Satya MUDDAMSETTY, *Le2i*
Desire SIDIBE, *University of Burgundy,LE2I*
Fabrice MERIAUDEAU, *University of Burgundy,LE2I*

14:40 ★ **ARS-01.3 –** LOCAL FEATURE EMBEDDING FOR WEAKLY SUPERVISED IMAGE CLASSIFICATION
Junxia LI, *Nanjing University of Science and Technology; Nanyang Technological University*
Deepu RAJAN, *Nanyang Technological University*
Jian YANG, *Nanjing University of Science and Technology*

15:00 **ARS-01.4 –** PHOTOGRAPHIC PAPER CLASSIFICATION VIA LOCAL RADIUS INDEX METRIC
Yuanhao ZHAI, *University of Michigan*
David NEUHOFF, *University of Michigan*

15:20 **ARS-01.5 –** DPM REVISITED: UTILIZING ROOT-PART SPATIAL DISTRIBUTION FOR VEHICLEVIEWPOINT ESTIMATION
Tao CHEN, *Institute for Infocomm Research, Agency for Science, Technology and Research*
Shijian LU, *Institute for Infocomm Research, Agency for Science, Technology and Research*

15:40 **ARS-01.6 –** FEATURES WE TRUST!
Amir M. RAHIMI, *University of California at Santa Barbara*
Lakshmanan NATARAJ, *University of California at Santa Barbara*
B.S. MANJUNATH, *University of California at Santa Barbara*

ARS-O14: Object Detection and Tracking I

Monday, 14:00-16:00
LECTURE
Room: **204B**

Session Chair(s): Maria Aishy AMER, *Concordia University*

14:00 **ARS-O14.1 –** ONLINE LEARNING OF MULTI-FEATURE WEIGHTS FOR ROBUST OBJECT TRACKING
Tao ZHOU, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Harish BHASKAR, *Dept. of Elec. & Comp. Engg., Khalifa Univ. of Science Technology and Researc*
Kai XIE, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Jie YANG, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Xiangjian HE, *Faculty of Engineering and Information Technology, University of Technology*
Pengfei SHI, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*

14:20 **ARS-O14.2 –** OBJECT TRACKING WITH ADAPTIVE MOTION MODELING OF PARTICLE FILTER AND SUPPORT VECTOR MACHINES
Kumara RATNAYAKE, *Concordia University*
Maria Aishy AMER, *Concordia University*

14:40 **ARS-O14.3 –** DETECTING REPETITIVE ELEMENTS WITH ACCURATE LOCATIONS AND SHAPES FROM URBAN FAÇADE
Yongjian LIAN, *State Key Laboratory of Virtual Reality Technology and Systems, Beihang University*
Xukun SHEN, *State Key Laboratory of Virtual Reality Technology and Systems, Beihang University*

15:00 **ARS-O14.4 –** REPRODUCIBLE EVALUATION OF PAN-TILT-ZOOM TRACKING
Gengjie CHEN, *Sun Yat-sen University*
Pierre-Luc ST-CHARLES, *École Polytechnique de Montréal*
Wassim BOUACHIR, *École Polytechnique de Montréal*
Guillaume-Alexandre BILODEAU, *École polytechnique de Montréal*
Robert BERGEVIN, *Université Laval*

15:20 **ARS-O14.5 –** REGULARIZATION IN METRIC LEARNING FOR PERSON RE-IDENTIFICATION
Jianlou SI, *Beijing University of Posts and Telecommunications*
Honggang ZHANG, *Beijing University of Posts and Telecommunications*
Chun-Guang LI, *Beijing University of Posts and Telecommunications*

15:40 **ARS-O14.6 –** A HIERARCHICAL ANTI-OCCLUSION TRACKING ALGORITHM BASED ON DMPF AND ORB
Kejia LIU, *University of Science and Technology of China*
Bin LIU, *University of Science and Technology of China*
Chang CHEN, *University of Science and Technology of China*
Chang Wen CHEN, *University at Buffalo, the State University of New York*

ARS-O16: Pose and Gesture Recognition

Monday, 14:00-16:00
LECTURE
Room: **203**
Session Chair(s): José ORAMAS M., *KU Leuven*

14:00 **ARS-O16.1 –** SEQUENTIAL NON-RIGID POINT REGISTRATION FOR 3D HUMAN POSE TRACKING
Song GE, *Oklahoma State University*
Guoliang FAN, *Oklahoma State University*

14:20 **ARS-O16.2 –** RECOGNIZING HAND-OBJECT INTERACTIONS IN WEARABLE CAMERA VIDEOS
Tatsuya ISHIHARA, *IBM Research - Tokyo*
Kris KITANI, *Carnegie Mellon University*
Wei-Chiu MA, *Carnegie Mellon University*
Hironobu TAKAGI, *IBM Research - Tokyo*
Chieko ASAKAWA, *IBM Research - Tokyo*

14:40 **ARS-O16.3 –** GESTURE RECOGNITION USING ACTIVE BODY PARTS AND ACTIVE DIFFERENCE SIGNATURES
Himanshu KUMAR, *Rochester Institute of Technology*
Raymond PTUCHA, *Rochester Institute of Technology*

15:00 **ARS-O16.4 –** ESTIMATION OF EYE GAZE DIRECTION ANGLES BASED ON ACTIVE APPEARANCE MODELS
Petros KOUTRAS, *National Technical University of Athens*
Petros MARAGOS, *National Technical University of Athens*

15:20 **ARS-O16.5 –** TOWARDS SIGN LANGUAGE RECOGNITION BASED ON BODY PARTS RELATIONS
Marc MARTINEZ-CAMARENA, *Universidad Politécnica de Valencia*
José ORAMAS, *KU Leuven*
Tinne TUYTELAARS, *KU Leuven*

15:40 ★ **ARS-O16.6 –** HEAD POSE ESTIMATION VIA PROBABILISTIC HIGH-DIMENSIONAL REGRESSION
Vincent DROUARD, *Inria Grenoble Rhône-Alpes*
Silèye BA, *Inria Grenoble Rhône-Alpes*
Georgios EVANGELIDIS, *Inria Grenoble Rhône-Alpes*
Antoine DELEFORGE, *Friedrich-Alexander-Universität Erlangen-Nürnberg*
Radu HORAUD, *Inria Grenoble Rhône-Alpes*

ARS-P10: Facial Features/Gender/Age Recognition

Monday, 14:00-16:00
POSTER
Room: **POSTER D**

Session Chair(s): Hairong QI, *University of Tennessee*

ARS-P10.1 – ROBUST FACIAL LANDMARK LOCALIZATION USING MULTI PARTIAL FEATURES
Yanchao DONG, *Tongji Unviersity*
Yanming WANG, *Tongji Unviersity*
Jiguang YUE, *Tongji Unviersity*
Zhencheng HU, *Kumamoto University*

★ **ARS-P10.2 –** INVESTIGATING THE FEASIBILITY OF IMAGE-BASED NOSE BIOMETRICS
Niv ZEHNGUT, *Carnegie Mellon University*
Felix JUEFEI-XU, *Carnegie Mellon University*
Rishabh BARDIA, *Carnegie Mellon University*
Dipan PAL, *Carnegie Mellon University*
Chandrasekhar BHAGAVATULA, *Carnegie Mellon University*
Marios SAVVIDES, *Carnegie Mellon University*

ARS-P10.3 – SUPERVISED FRACTIONAL EIGENFACES
Tiago DE CARVALHO, *Universidade Federal de Pernambuco (UFPE)*
Adriano COSTA, *Universidade Federal Rural de Pernambuco (UFRPE)*
Maria SIBALDO, *Universidade Federal de Pernambuco (UFPE)*
Ing Ren TSANG, *Universidade Federal de Pernambuco (UFPE)*
George CAVALCANTI, *Universidade Federal de Pernambuco (UFPE)*

ARS-P10.4 – FACIAL FEATURE PARSING AND LANDMARK DETECTION VIA LOW-RANK MATRIX DECOMPOSITION
Rui GUO, *University of Tennessee*
Hairong QI, *University of Tennessee*

ARS-P10.5 – PRECISE EYE LOCALIZATION WITH IMPROVED SDM
Mingcai ZHOU, *Samsung Research Center-Beijing, SAIT China Lab*
Jingu HEO, *Samsung Electronics, SAIT, Multimedia Processing Lab*
Xiying WANG, *Samsung Research Center-Beijing, SAIT China Lab*
Dongkyung NAM, *Samsung Electronics, SAIT, Multimedia Processing Lab*
Haitao WANG, *Samsung Research Center-Beijing, SAIT China Lab*

★ **ARS-P10.6 –** AN ADAPTIVE MOTION MODEL FOR PERSON TRACKING WITH INSTANTANEOUS HEAD-POSE FEATURES
Rolf Hugh BAXTER, *Heriot-Watt University*
Michael LEACH, *Chemring Technology Solutions*
Sankha Subhra MUKHERJEE, *Heriot-Watt University*
Neil ROBERTSON, *Heriot-Watt University*

ARS-P11: Feature Detection and Tracking

Monday, 14:00-16:00
POSTER
Room: **POSTER B**
Session Chair(s): Sébastien ROY, *Université de Montréal*

ARS-P11.1 – OCCLUSION HANDLING IN FEATURE POINT TRACKING USING RANKED PARTS BASED MODELS
Karan RAMPAL, *NEC Corporation*
Kazuyuki SAKURAI, *NEC Corporation*
Hitoshi IMAOKA, *NEC Corporation*

ARS-P11.2 – REGRESSION BASED LANDMARK ESTIMATION AND MULTI-FEATURE FUSION FOR VISUAL SPEECH RECOGNITION
Xuewu ZHANG, *Shenzhen Graduate School, Peking University*
Hong LIU, *Shenzhen Graduate School, Peking University*
Pingping WU, *Shenzhen Graduate School, Peking University*

ARS-P11.3 – BIT: BIO-INSPIRED TRACKER
Bolun CAI, *South China University of Technology*
Xiangmin XU, *South China University of Technology*
Xiaofen XING, *South China University of Technology*
Chunmei QING, *South China University of Technology*

ARS-P11.4 – REAL-TIME SOFTWARE SYNCHRONISATION OF WEBCAMS FOR LIVE 3D TRACKING
Rania BENRHAIEM, *Université de Montréal*
Sébastien ROY, *Université de Montréal*
Jean MEUNIER, *Université de Montréal*

ARS-P11.5 – BACKGROUND-FOREGROUND TRACKING FOR VIDEO OBJECT SEGMENTATION
Juan Manuel PÉREZ RUA, *Technicolor*
Tomas CRIVELLI, *Technicolor*
Patrick PÉREZ, *Technicolor*

ARS-P15: Image and Scene Analysis

Monday, 14:00-16:00
POSTER
Room: **POSTER A**

Session Chair(s): Haoyu REN, *Simon Fraser University*

ARS-P15.1 – SUPERPIXEL-BASED STATISTICAL ANOMALY DETECTION FOR SENSE AND AVOID
Odysseas PAPPAS, *University of Bristol*
Alin ACHIM, *University of Bristol*
David BULL, *University of Bristol*

ARS-P15.2 – OBJECT RECOGNITION BASED ON DEFORMABLE EDGE SET
Haoyu REN, *Simon Fraser University*
Ze-Nian LI, *Simon Fraser University*

ARS-P15.3 – CHORD: CASCADED AND A CONTRARIO METHOD FOR HOLE CRACK DETECTION
Jierong CHENG, *Institute for Infocomm Research, A-STAR*
Wei XIONG, *Institute for Infocomm Research, A-STAR*
Yue WANG, *Institute for Infocomm Research, A-STAR*
Shue Ching CHIA, *Institute for Infocomm Research, A-STAR*
Wenyu CHEN, *Institute for Infocomm Research, A-STAR*
Jia DU, *Institute for Infocomm Research, A-STAR*
Ying GU, *Institute for Infocomm Research, A-STAR*
Victor Ter Shen KOW, *National University of Singapore*

ARS-P15.4 – BILATERAL SYMMETRY DETECTION BASED ON SCALE INVARIANT STRUCTURE FEATURE
Ibragim ATADJANOV, *Kyung Hee University*
Seungkyu LEE, *Kyung Hee University*

ARS-P15.5 – DETECT COHERENT MOTIONS IN CROWD SCENES BASED ON TRACKLETS ASSOCIATION
Yi ZOU, *Shanghai Jiao Tong University*
Xu ZHAO, *Shanghai Jiao Tong University*
Yuncai LIU, *Shanghai Jiao Tong University*

ARS-P15.6 – REAL TIME RAILWAY EXTRACTION BY ANGLE ALIGNMENT MEASURE
Hao WU, *Hong Kong Polytechnic University*
Wan-Chi SIU, *Hong Kong Polytechnic University*

ARS-P29: Texture Synthesis

Monday, 14:00-16:00
POSTER
Room: **POSTER C**

Session Chair(s): Mohamed DERICHE, *KFUPM*

ARS-P29.1 – QUANTUM-COMPUTATION-INSPIRED REVERSE ANALYSIS TEXTURE SYNTHESIS
Javier PORTILLA, *Consejo Superior de Investigaciones Científicas (CSIC)*

ARS-P29.2 – FAST IMAGE COMPLETION METHOD USING PATCH OFFSET STATISTICS
Martin KOEPPEL, *Technical University of Berlin*
Mehdi BEN MAKHLOUF, *Technical University of Berlin*
Karsten MUELLER, *Fraunhofer Heinrich Hertz Institute*
Thomas WIEGAND, *Technical University of Berlin*

ARS-P29.3 – SUPER-RESOLUTION FROM LEARNING THE ENHANCEMENT RATIO AND TEXTURE/ RESIDUAL DICTIONARY
Fang-Ju LIN, *Academia Sinica, Taipei, Taiwan*

ARS-P29.4 – TRANSPARENT TEXTURE TRANSFER
Chan-Tai YEH, *National Tsing Hua University*
Ting-Hui TSAI, *National Tsing Hua University*
Hwann-Tzong CHEN, *National Tsing Hua University*

★ **ARS-P29.5 –** AN OPTIMIZATION-BASED APPROACH FOR RESTORING MISSING STRUCTURES AND TEXTURES IN IMAGES
Jian MU, *University of Notre Dame*
Danny CHEN, *University of Notre Dame*

ARS-P36: Visual Tracking I

Monday, 14:00-16:00
POSTER Room: **POSTER E**

Session Chair(s): Sylvain ROUSSEAU, *École Centrale de Lille*

ARS-P36.1 – ROBUSTLY TRACKING OBJECTS VIA MULTI-TASK KERNEL DYNAMIC SPARSE MODEL
Zhangjian JI, *University of Chinese Academy of Sciences*
Weiqiang WANG, *University of Chinese Academy of Sciences*
Ke LU, *University of Chinese Academy of Sciences*

ARS-P36.2 – VISUAL TRACKING VIA GUIDED FILTER
Dandan DU, *Dalian University of Technology*
Huchuan LU, *Dalian University of Technology*
Fu LI, *Dalian University of Technology*
Lihe ZHANG, *Dalian University of Technology*

ARS-P36.3 – VISUAL TRACKING WITH A STRUCTURED LOCAL MODEL
Dandan DU, *Dalian University of Technology*
Huchuan LU, *Dalian University of Technology*
Lihe ZHANG, *Dalian University of Technology*

ARS-P36.4 – INTERACTIVE IMAGE SEGMENTATION VIA CASCADED METRIC LEARNING
Wenbin LI, *Nanjing University*
Yinghuan SHI, *Nanjing University*
Wanqi YANG, *Nanjing University*
Hao WANG, *Nanjing University*
Yang GAO, *Nanjing University*

ARS-P36.5 – PARTS-BASED MULTI-TASK SPARSE LEARNING FOR VISUAL TRACKING
Zhengjian KANG, *New York University*
Edward WONG, *New York University*

★ **ARS-P36.6 –** LEARNING A TEMPORALLY INVARIANT REPRESENTATION FOR VISUAL TRACKING
Chao MA, *Shanghai Jiao Tong University*
Xiaokang YANG, *Shanghai Jiao Tong University*
Chongyang ZHANG, *Shanghai Jiao Tong University*
Ming-Hsuan YANG, *University of California at Merced*

ARS-P37: Visual Tracking II

Monday, 14:00-16:00
POSTER
Room: **POSTER F**

Session Chair(s): Sylvain ROUSSEAU, *École Centrale de Lille*

ARS-P37.1 – CORRELATED WARPED GUSSIAN PROCESSES FOR GENDER-SPECIFIC AGE ESTIMATION
Difei GAO, *University of Electronic Science and Technology of China*
Lili PAN, *University of Electronic Science and Technology of China*
Risheng LIU, *School of Software Technology, Dalian University of Technology*
Rui CHEN, *University of Electronic Science and Technology of China*
Mei XIE, *University of Electronic Science and Technology of China*

ARS-P37.2 – ROBUST VISUAL TRACKING VIA DISCRIMINATIVE SEQUENTIAL RANKING
Guangyu ZHONG, *Dalian University of Technology*
Risheng LIU, *Dalian University of Technology*
Zhixun SU, *Dalian University of Technology*

ARS-P37.3 – ROBUST VISUAL TRACKING VIA GUIDED LOW-RANK SUBSPACE LEARNING
Di WANG, *Dalian University of Technology*
Risheng LIU, *Dalian University of Technology*
Zhixun SU, *Dalian University of Technology*

ARS-P37.4 – DOUBLE LAYER SALIENT PARTS BASED MULTI-PEOPLE TRACKING
Zhi ZHOU, *Nanyang Technological University*
Yue WANG, *Institute for Infocomm Research (I2R)*
Eam Khwang TEOH, *Nanyang Technological University*

ARS-P37.5 – VISUAL TRACKING VIA ORTHOGONAL SPARSE CODING
Jing WANG, *Dalian University of Technology*
Yiyang WANG, *Dalian University of Technology*
Risheng LIU, *Dalian University of Technology*
Zhixun SU, *Dalian University of Technology*

ARS-P37.6 – DICTIONARY LEARNING FOR A SPARSE APPEARANCE MODEL IN VISUAL TRACKING
Sylvain ROUSSEAU, *École Centrale de Lille*
Christelle GARNIER, *Telecom Lille*
Pierre CHAINAIS, *École Centrale de Lille*

ARS-P38: Visual Tracking III

Monday, 14:00-16:00
POSTER
Room: **POSTER G**

Session Chair(s): Sylvain ROUSSEAU, *École Centrale de Lille*

ARS-P38.1 – ADAPTIVE VISUAL TARGET DETECTION AND TRACKING USING INCREMENTAL APPEARANCE LEARNING
Mahdi YAZDIAN-DEHKORDI, *Shiraz University*
Zohreh AZIMIFAR, *Shiraz University*

ARS-P38.2 – ONLINE MULTI-PERSON TRACKING BASED ON GLOBAL SPARSE COLLABORATIVE REPRESENTATIONS
Loïc FAGOT-BOUQUET, *CEA LIST*
Romaric AUDIGIER, *CEA LIST*
Yoann DHOME, *CEA LIST*
Frédéric LERASLE, *CNRS, LAAS*

ARS-P38.3 – DIRECTIONAL RINGLET INTENSITY FEATURE TRANSFORM FOR TRACKING
Evan KRIEGER, *University of Dayton*
Paheding SIDIKE, *University of Dayton*
Theus ASPIRAS, *University of Dayton*
Vijayan ASARI, *University of Dayton*

ARS-P38.4 – MULTI-TARGET TRACKING VIA PARATACTIC-SERIAL TRACKLET GRAPH
Hao SHENG, *Beihang University*
Jiahui CHEN, *Beihang University*
Jiangjian XIAO, *Ningbo Institute of Industrial Technology*
Chao LI, *Beihang University*
Zhang XIONG, *Beihang University*

ARS-P38.5 – FAST TRACKING VIA CONTEXT DEPTH MODEL LEARNING
Zhaoyun CHEN, *National University of Defense Technology*
Lei LUO, *National University of Defense Technology*
Mei WEN, *National University of Defense Technology*
Chunyuan ZHANG, *National University of Defense Technology*

ARS-P38.6 – CONTEXTUAL OBJECT TRACKER WITH STRUCTURE ENCODING
Tanushri CHAKRAVORTY, *École polytechnique de Montréal*
Guillaume-Alexandre BILODEAU, *École polytechnique de Montréal*
Eric GRANGER, *École de technologie supérieure*

COI-P1: Hyperspectral Imaging

Monday, 14:00-16:00
POSTER
Room: **POSTER K**

Session Chair(s): Ronan FABLET, *Telecom Bretagne*

COI-P1.1 – A SPECTRAL UNMIXING METHOD BASED ON WAVELET WEIGHTED SIMILARITY
Qingyu PANG, *Tsinghua University*
Jing YU, *Tsinghua University*
Weidong SUN, *Tsinghua University*

COI-P1.2 – HYPERSPECTRAL IMAGE INTERPRETATION BASED ON PARTIAL LEAST SQUARES
Andrey Bicalho SANTOS, *Federal University of Minas Gerais*
Arnaldo ARAUJO, *Federal University of Minas Gerais*
William Robson SCHWARTZ, *Federal University of Minas Gerais*
David MENOTTI, *Federal University of Ouro Preto*

COI-P1.3 – SPATIO-SPECTRAL GAUSSIAN RANDOM FIELD MODELING APPROACH FOR TARGET DETECTION ON HYPERSPECTRAL DATA OBTAINED IN VERY LOW SNR
Ola AHMAD, *University of Strasbourg*
Christophe COLLET, *University of Strasbourg*
Fabien SALZENSTEIN, *University of Strasbourg*

COI-P1.4 – MULTILAYER MANIFOLD AND SPARSITY CONSTRAINTED NONNEGATIVE MATRIXFACTORIZATION FOR HYPERSPECTRAL UNMIXING
Shu ZHENQIU, *Nanjing University of Science and Technology*
Zhou JUN, *Griffith University*
Tong LEI, *Griffith University*
Bai XIAO, *Beihang University*
Zhao CHUNXIA, *Nanjing University of Science and Technology*

COI-P1.5 – HYPERSPECTRAL CLASSIFICATION VIA LEARNT FEATURES
Yazhou LIU, *Nanjing University of Science and Technology*
Guo CAO, *Nanjing University of Science and Technology*
Quansen SUN, *Nanjing University of Science and Technology*
Mel SIEGEL, *Nanjing University of Science and Technology*

COI-P1.6 – NON-HOMOGENEOUS PRIORS IN A BAYESIAN LATENT CLASS MODEL FOR OCEAN COLOR INVERSION
Bertrand SAULQUIN, *ACRI-ST*
Ronan FABLET, *telecom bretagne*

COI-P2: Radar Imaging

Monday, 14:00-16:00
POSTER
Room: **POSTER L**

Session Chair(s): Mihai DATCU, *German Aerospace Center (DLR)*

COI-P2.1 – NONPARAMETRIC BACKGROUND MODEL BASED CLUTTER MAP FOR X-BAND MARINE RADAR
Yi ZHOU, *Information Science and Technology College, Dalian Maritime University*
Xiaoming LIU, *Information Science and Technology College, Dalian Maritime University*
Jidong SUO, *Information Science and Technology College, Dalian Maritime University*
Chang LIU, *Information Science and Technology College, Dalian Maritime University*
Xiaohong SU, *Dalian Maritime University*
Limei LIU, *Computer Department of Library, Dalian Maritime University*

COI-P2.2 – A NOVEL MOVING PARAMETER ESTIMATION APPROACH OF FAST MOVING TARGETS BASED ON PHASE EXTRACTION
Kai TAN, *Key Laboratory of Electromagnetic Space Information, Chinese Academy of Sciences*
Weihai LI, *Key Laboratory of Electromagnetic Space Information, Chinese Academy of Sciences*

COI-P2.3 – A VALIDATION OF ICA DECOMPOSITION FOR POLSAR IMAGES BY USING MEASURES OF NORMALIZED COMPRESSION DISTANCE
Radu T. NASE, *University Politehnica of Bucharest*
Corina V. DUVA, *University Politehnica of Bucharest*
Mihai DATCU, *German Aerospace Center*
Dan R. DUCANU, *Military Technical Academy*

COI-P2.4 – A GENERALIZED FORM OF THE INSAR PHASE UNWRAPPING PROBLEM BASED ON A COMPRESSED SENSING TECHNIQUE
Wajih BEN ABDALLAH, *Higher School of Communications of Tunis*
Riadh ABDELFATTAH, *Higher School of Communications of Tunis*

COI-P2.5 – STEREO RADARGRAMMETRY USING AIRBORNE SAR IMAGES WITHOUT GCP
Daiki MARUKI, *Tohoku University*
Shuji SAKAI, *Tohoku University*
Koichi ITO, *Tohoku University*
Takafumi AOKI, *Tohoku University*
Jyunpei UEMOTO, *National Institute of Information and Communications Technology*
Seiho URATSUKA, *National Institute of Information and Communications Technology*

COI-P2.6 – INTEGRABILITY-REGULARIZED PHASE UNWRAPPING VIA SPARSE ERROR CORRECTION
Garrett WARNELL, *U.S. Army Research Laboratory*
Vishal M PATEL, *University of Maryland*
Rama CHELLAPPA, *University of Maryland*

COI-P3: Seismic and Remote Sensing Imaging

Monday, 14:00-16:00
POSTER
Room: **POSTER M**

Session Chair(s): Stefan WINKLER, *Advanced Digital Sciences Center, University of Illinois at Urbana-Champaign*

COI-P3.1 – MULTI-LEVEL SEMANTIC LABELING OF SKY/CLOUD IMAGES
Soumyabrata DEV, *Nanyang Technological University Singapore*
Yee Hui LEE, *Nanyang Technological University Singapore*
Stefan WINKLER, *Advanced Digital Sciences Center (ADSC), University of Illinois at Urbana-Champaign*

COI-P3.2 – TENSOR-BASED SUBSPACE LEARNING FOR TRACKING SALT DOME BOUNDARIES
Zhen WANG, *Georgia Institute of Technology*
Zhiling LONG, *Georgia Institute of Technology*
Ghassan ALREGIB, *Georgia Institute of Technology*

COI-P3.3 – DESTRIPING ALGORITHM WITH L0 SPARSITY PRIOR FOR REMOTE SENSING IMAGES
Hai LIU, *Central China Normal University*
Zhaoli ZHANG, *Central China Normal University*
Sanya LIU, *Central China Normal University*
Tingting LIU, *Central China Normal University*
Yi CHANG, *Central China Normal University*

COI-P3.4 – SPARSE ADAPTIVE TEMPLATE MATCHING AND FILTERING FOR 2D SEISMIC IMAGES WITH DUAL-TREE WAVELETS AND PROXIMAL METHODS
Mai Quyen PHAM, *IFP Energies nouvelles*
Caroline CHAUX, *Aix-Marseille Université, CNRS, Centrale Marseille, I2M, UMR 7373*
Laurent DUVAL, *IFP Energies nouvelles*
Jean-Christophe PESQUET, *Université Paris-Est LIGM UMR-CNRS 8049*

COI-P3.5 – A HYBRID APPROACH FOR SALT DOME DETECTION IN 2D AND 3D SEISMIC DATA
Asjad AMIN, *KFUPM*
Mohamed DERICHE, *KFUPM*

ELI-O4: HDR Imaging

Monday, 14:00-16:00
LECTURE
Room: **205A**

Session Chair(s): David BULL, *University of Bristol*

14:00 **ELI-O4.1 –** EXPOSURE BRACKETING VIA AUTOMATIC EXPOSURE SELECTION
Reza POURREZA-SHAHRI, *University of Texas at Dallas*
Nasser KEHTARNAVAZ, *University of Texas at Dallas*

14:20 **ELI-O4.2 –** RADIOMETRIC CALIBRATION FOR HDR IMAGING
Ahmed SOHAIB, *The Australian National University*
Antonio ROBLES-KELLY, *The Australian National Universit, National ICT Australia*

14:40 ★ **ELI-O4.3 –** CHROMATIC CALIBRATION OF AN HDR DISPLAY USING 3D OCTREE FORESTS
Jing LIU, *UC Santa Cruz*
Nikolce STEFANOSKI, *Disney Research Zürich*
Tunc AYDIN, *Disney Research Zürich*
Anselm GRUNDHÖFER, *Disney Research Zürich*
Aljoša SMOLIC, *Disney Research Zürich*

15:00 **ELI-O4.4 –** ADAPTIVE EXPOSURE FUSION FOR HIGH DYNAMIC RANGE IMAGING
Sidhdharthkumar PATEL, *Ryerson University*
Dimitrios ANDROUTSOS, *Ryerson University*
Matthew KYAN, *Ryerson University*

15:20 **ELI-O4.5 –** HIGH DYNAMIC RANGE CONTENT CALIBRATION FOR ACCURATE ACQUISITION AND DISPLAY
Yang ZHANG, *Bristol Vision Institute, University of Bristol*
Dimitris AGRAFIOTIS, *Bristol Vision Institute, University of Bristol*
David BULL, *Bristol Vision Institute, University of Bristol*

IFS-P2: Data Hiding I

Monday, 14:00-16:00
POSTER
Room: **POSTER N**

Session Chair(s): William PUECH, *Université de Montellier*

IFS-P2.1 – ROBUST STEGANALYSIS BASED ON TRAINING SET CONSTRUCTION AND ENSEMBLE CLASSIFIERS WEIGHTING
Xikai XU, *Institute of Automation, Chinese Academy of Sciences*
Jing DONG, *Institute of Automation, Chinese Academy of Sciences*
Wei WANG, *Institute of Automation, Chinese Academy of Sciences*
Tieniu TAN, *Institute of Automation, Chinese Academy of Sciences*

IFS-P2.2 – IMAGE FINGERPRINTING SYSTEM BASED ON COLLUSION SECURE CODE AND WATERMARKING METHOD
Minoru KURIBAYASHI, *Kobe University*
Hans Georg SCHAATHUN, *Alesund University*

IFS-P2.3 – WATERMARKING FOR POSITION-MAPPING-BASED HALFTONING
Jing-ming GUO, *National Taiwan University of Science and Technology*
Yun-Fu LIU, *National Taiwan University of Science and Technology*
Shih-Hung CHOU, *National Taiwan University of Science and Technology*
Jiann-Der LEE, *Chang Gung University*

IFS-P2.4 – REVERSIBLE WATERMARKING USING ENHANCED LOCAL PREDICTION
Jiayuan FAN, *Agency for Science, Technology and Research (A*STAR)*
Tao CHEN, *Agency for Science, Technology and Research (A*STAR)*

IFS-P2.5 – RECURSIVE OPTIMIZATION OF SPHERICAL WATERMARKING USING TRANSPORTATION THEORY
Yuan-Gen WANG, *School of Information, Zhongkai University of Agriculture and Engineering*
Jian CAO, *Shenzhen Graduate School, Harbin Institute of Technology*
Guopu ZHU, *Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences*

IFS-P2.6 – FEATURE REGIONS BASED ON GRAPH OPTIMIZATION FOR ROBUST REVERSIBLE WATERMARKING
Guangxue YIN, *Xidian University*
Lingling AN, *Xidian University*
Xinbo GAO, *Xidian University*
Dacheng TAO, *University of Technology, Sydney*

IFS-P5: Data Hiding II

Monday, 14:00-16:00
POSTER
Room: **POSTER 0**

Session Chair(s): William PUECH, *Université de Montellier*

★ **IFS-P5.1 –** ROBUST CONTENT FINGERPRINTING ALGORITHM BASED ON SPARSE CODING
Yuenan LI, *Tianjin University*

IFS-P5.2 – OUTLIER AGGREGATION TO PICK UP SCATTERED WATERMARK ENERGY
Hasan SHEIKH FARIDUL, *Technicolor R&D France*
Gwenaël DOËRR, *Technicolor R&D France*

IFS-P5.3 – A NEW DATA CODING SCHEME USING CONTRAST-CONTROLLABLE COLOR INTERSECTION
Yi-Chong ZENG, *Institute for Information Industry*
Wen-Tsung CHANG, *Institute for Information Industry*

IFS-P5.4 – IMAGE TRANSMORPHING WITH JPEG
Lin YUAN, *EPFL*
Touradj EBRAHIMI, *EPFL*

IFS-P5.5 – HIGH CAPACITY DATA-HIDING FOR 3D MESHES BASED ON STATIC ARITHMETIC CODING
Vincent ITIER, *LIRMM*
William PUECH, *LIRMM*
Jean-Pierre PEDEBOY, *STRATEGIES*

NEW-O1: Graph-based Image & Video Coding

Monday, 14:00-16:00
LECTURE
Room: **202**

Session Chair(s): Riccardo LEONARDI, *Univerity of Brescia*

14:00 ★ **NEW-O1.1 –** PREDICTIVE GRAPH CONSTRUCTION FOR IMAGE COMPRESSION
Giulia FRACASTORO, *Politecnico di Torino*
Enrico MAGLI, *Politecnico di Torino*

14:20 **NEW-01.2 –** UNIFYING THE RANDOM WALKER ALGORITHM AND THE SIR MODEL FOR GRAPH CLUSTERING AND IMAGE SEGMENTATION
Christos BAMPIS, *University of Texas at Austin*
Petros MARAGOS, *National Technical University of Athens*

14:40 ★ **NEW-01.3 –** SUPERPIXEL-DRIVEN GRAPH TRANSFORM FOR IMAGE COMPRESSION
Giulia FRACASTORO, *Politecnico di Torino*
Francesco VERDOJA, *Università degli Studi di Torino*
Marco GRANGETTO, *Università degli Studi di Torino*
Enrico MAGLI, *Politecnico di Torino*

15:00 ★ **NEW-01.4 –** GRAPH-BASED MOTION ESTIMATION AND COMPENSATION FOR DYNAMIC 3D POINT CLOUD COMPRESSION
Dorina THANOU, *EPFL*
Philip CHOU, *Microsoft Research*
Pascal FROSSARD, *EPFL*

15:20 **NEW-01.5 –** GRAPH-BASED TRANSFORMS FOR INTER PREDICTED VIDEO CODING
Hilmi E. EGILMEZ, *University of Southern California*
Amir SAID, *LG Electronics*
Yung-Hsuan CHAO, *University of Southern California*
Antonio ORTEGA, *University of Southern California*

SNT-S2: Show & Tell II

Monday, 14:00-16:00
SHOW & TELL
Room: **SHOW & TELL**

Session Chair(s): Fabrice LABEAU, *McGill University*

SNT-S2.1 – AN INTERACTIVE AND REALTIME DEPTH COMPOSITING TOOL FOR CINEMA PREVIZ ON-SET
Timothée DE GOUSSENCOURT, *Gipsa-lab & Solidanim*
Pascal BERTOLINO, *Gipsa-lab*
In this demonstration, we will present a tool for virtual production in movie making. We will present a hardware implementation as well as the processing steps. To illustrate our demonstration, 2 scenarios will be shown in which people will be able to interact with virtual contents.

SNT-S2.2 – EASY SEMI-SUPERVISED SEGMENTATION OF COMPLEX OBJECTS
Pierre BUYSSENS, *Normandie Université*
Olivier LEZORAY, *Normandie Université*
We will demonstrate a novel semi-supervised segmentation on a set of provided images. This demonstration basically consists in placing seeds with 2 (foreground/background) or more labels to get a desired segmentation result, such as the ones in the paper. The demo will interactively show the diffusion of the labels on the image from the seeds provided by the user on the application.

SNT-S2.3 – TOWARDS FAST HEVC ENCODING
Saverio G. BLASI, *Queen Mary University of London*
Eduardo PEIXOTO, *Universidade de Brasilia*
Bruno MACCHIAVELLO, *Universidade de Brasilia*
Edson Mintsu HUNG, *Universidade de Brasilia*
Ivan ZUPANCIC, *Queen Mary University of London*
In this demo, the results of several algorithms developed with the objective of reducing the complexity of HEVC encoder implementations will be demonstrated. The demo will show the visual quality of various full-HD sequences encoded using each of the algorithms separately or combining several algorithms together, comparing it with reference encoder implementations, while presenting the time needed to encode each of the presented sequences.

SNT-S2.4 – QUANTUM CIRCLE DETECTION: APPLICATIONS IN CELL COUNTING AND PEOPLE TRACKING
Davi GEIGER, *University of New York*
This demo shows the use of quantum methods for circle detection, with applications in cell-counting and people (head) tracking. Replacing the positive numbers classically used in the parameter space of the Hough transforms by complex numbers allows cancellation effects when adding up the votes. Cancellation and the computation of shape likelihood via a complex number's magnitude square lead to more robust solutions than the classic algorithms.

SS8-O2: Big Media Data Processing and Analysis: Ad memoriam of Prof. A.N. Venetsanopoulos

Monday, 14:00-16:00
LECTURE Room: **205B**
Session Chair(s): Ioannis PITAS, *Aristotle University of Thessaloniki*

14:00 ★ SS8-O2.1 – MULTIPASS ENCODING FOR REDUCING PULSING ARTIFACTS IN CLOUD BASED VIDEO TRANSCODING
Yao-Chung LIN, *Google Inc.*
Hugh DENMAN, *Google Inc.*
Anil KOKARAM, *Google Inc.*

14:20 SS8-O2.5 – VISUAL ATTENTION FOR CONTENT BASED IMAGE RETRIEVAL
Alex PAPUSHOY, *University of York*
Adrian BORS, *University of York*

14:40 SS8-O2.3 – FACE2GPS: ESTIMATING GEOGRAPHIC LOCATION FROM FACIAL FEATURES
Mohammad ISLAM, *University of Kentucky*
Scott WORKMAN, *University of Kentucky*
Nathan JACOBS, *University of Kentucky*

15:00 SS8-O2.4 – LARGE-SCALE NONLINEAR FACIAL IMAGE CLASSIFICATION BASED ON APPROXIMATE KERNEL EXTREME LEARNING MACHIINE
Alexandros IOSIFIDIS, *Aristotle University of Thessaloniki*
Anastasios TEFAS, *Aristotle University of Thessaloniki*
Ioannis PITAS, *Aristotle University of Thessaloniki*

15:20 **SS8-O2.2 –** TRAFFIC FLOW FROM A LOW FRAME RATE CITY CAMERA
Evgeny TOROPOV, *CMU*
Liangyan GUI, *CMU*
Shanghang ZHANG, *CMU*
Satwik KOTTUR, *CMU*
Jose MOURA, *CMU*

TEC-O8: Curvilinear System Analysis

Monday, 14:00-16:00
LECTURE
Room: **205C**

Session Chair(s): Jan KYBIC, *Czech Technical University*

14:00 **TEC-O8.1 –** IMAGE ANALYSIS OF VIDEOKYMOGRAPHIC DATA
Adam NOVOZÁMSKÝ, *Institute of Information Theory and Automation, Academy of Sciences of the Czech Republic*
Jiri SEDLAR, *Institute of Information Theory and Automation, Academy of Sciences of the Czech Republic*
Ales ZITA, *Institute of Information Theory and Automation, Academy of Sciences of the Czech Republic*
Barbara ZITOVA, *Institute of Information Theory and Automation, Academy of Sciences of the Czech Republic*
Filip SROUBEK, *Institute of Information Theory and Automation, Academy of Sciences of the Czech Republic*
Jan G. SVEC, *Voice Research Lab, Department of Biophysics, Palack´y University*
Jitka VYDROVA, *Voice Centre Prague, Medical Healthcom, Ltd.*
Jan FLUSSER, *Institute of Information Theory and Automation, Academy of Sciences of the Czech Republic*

14:20 **TEC-O8.2 –** USER-GUIDED GRAPH REDUCTION FOR FAST IMAGE SEGMENTATION
Houssem-Eddine GUEZIRI, *École de technologie supérieure*
Michael J. MCGUFFIN, *École de technologie supérieure*
Catherine LAPORTE, *École de technologie supérieure*

14:40 **TEC-O8.3 –** FAST 3D TRACKING AND QUANTIZATION OF SMALL VASCULAR STRUCTURES IN 3D MEDICAL IMAGES
Yusuf AFIFI, *Ain Shams University*
Mahmoud KHALIL, *Ain Shams University*
Hazem ABBAS, *The German Univesity in Cairo*

15:00 **TEC-O8.4 –** IMAGE-BASED EVALUATION OF TREATMENT RESPONSES OF FACIAL WRINKLESUSING LDDMM REGISTRATION AND GABOR FEATURES
Nazre BATOOL, *Inria Sophia-Antipolis*
Josiane ZERUBIA, *Inria Sophia-Antipolis*

15:20 **TEC-O8.5 –** GEOMETRICAL GRAPH MATCHING USING MONTE CARLO TREE SEARCH
Miguel Amável PINHEIRO, *Czech Technical University in Prague*
Jan KYBIC, *Czech Technical University in Prague*

TEC-P15: Low-level Feature Extraction and Classification

Monday, 14:00-16:00
POSTER Room: **POSTER H**

Session Chair(s): Neslihan BAYRAMOGLU, *University of Oulu*

TEC-P15.1 – A NOVEL FEATURE DESCRIPTOR BASED ON MICROSCOPY IMAGE STATISTICS
Neslihan BAYRAMOGLU, *Center for Machine Vision Research, University of Oulu*
Juho KANNALA, *Center for Machine Vision Research, University of Oulu*
Malin AKERFELT, *Centre for Biotechnology, University of Turku*
Mika KAAKINEN, *Faculty of Biochemistry and Molecular Medicine, University of Oulu*
Lauri EKLUND, *Faculty of Biochemistry and Molecular Medicine, University of Oulu*
Matthias NEES, *Centre for Biotechnology, University of Turku*
Janne HEIKKILÄ, *Center for Machine Vision Research, University of Oulu*

TEC-P15.2 – A STUDY ON COMPACT AND DISCRIMINATIVE PARAMETER INITIALIZATION OF EXTREME LEARNING MACHINE FOR IMAGE CLASSIFICATION
Xiao LIU, *School of Information Science and Engineering, Qufu Normal University*
Jun MIAO, *Institute of Computing Technology, Chinese Academy of Sciences*
Laiyun QING, *School of Computer and Control Engineering, University of Chinese Academy of Sciences*
Baoxiang CAO, *School of Information Science and Engineering, Qufu Normal University*
Jun WANG, *Department of Mechanical and Automation Engineering, Chinese University of Hong Kong*

TEC-P15.3 – A TWO-STAGE HOG FEATURE EXTRACTION PROCESSOR EMBEDDED WITH SVM FOR PEDESTRIAN DETECTION
Xu YUAN, *Shenzhen Key Lab of Advanced Communication and Information Processing College of Information Engineering*
Li CAINIAN, *Shenzhen Key Lab of Advanced Communication and Information Processing College of Information Engineering*
Xu XIAOLIANG, *Shenzhen Key Lab of Advanced Communication and Information Processing College of Information Engineering*
Jiang MEI, *Shenzhen Key Lab of Advanced Communication and Information Processing College of Information Eng*
Zhang JIANGUO, *Shenzhen Key Lab of Advanced Communication and Information Processing College of Information Eng*

TEC-P15.4 – SCALE- AND ORIENTATION-INVARIANT KEYPOINTS IN HIGHER-DIMENSIONAL DATA
Blaine RISTER, *Stanford University*
Daniel REITER, *Rice University*
Hejia ZHANG, *Princeton University*
Daniel VOLZ, *Rice University*
Mark HOROWITZ, *Stanford University*
Refaat GABR, *University of Texas Health Science Center at Houston*
Joseph CAVALLARO, *Rice University*

TEC-P15.5 – A SUPERVISED LINEAR FEATURE EXTRACTION METHOD FOR MULTICLASS CLASSIFICATION PROBLEMS USING INFORMATION-THEORETIC LEARNING
Farid OVEISI, *University of Bolton*
Shahrzad OVEISI, *Azad University*
Jack LUO, *University of Bolton*

TEC-P15.6 – A LOCAL MUTUAL INFORMATION-BASED METHOD FOR LARGE SCALE ACTIVE LEARNING
Farid OVEISI, *University of Bolton*
Shahrzad OVEISI, *Azad University*
Jack LUO, *University of Bolton*

TEC-P24: Sparse Recovery

Monday, 14:00-16:00
POSTER
Room: **POSTER J**
Session Chair(s): Konstantinos N. PLATANIOTIS, *University of Toronto*

TEC-P24.1 – RECONSTRUCTION OF COMPRESSIVELY SENSED ULTRASOUND RF ECHOES BY EXPLOITING NON-GAUSSIANITY AND TEMPORAL STRUCTURE
Richard PORTER, *University of Bristol*
Vladislav TADIC, *University of Bristol*
Alin ACHIM, *University of Bristol*

★ **TEC-P24.2 –** SPARSE TENSOR RECOVERY VIA COMBINED FIRST AND SECOND ORDER HIGH-ACCURACY TOTAL VARIATION
Mahdi S. HOSSEINI, *University of Toronto*
Konstantinos N. PLATANIOTIS, *University of Toronto*

TEC-P24.3 – DISCRIMINATIVE LABEL CONSISTENT DICTIONARY LEARNING
Angshul MAJUMDAR, *IIITD*

TEC-P24.4 – SPATIAL-TEMPORAL RECOVERY FOR HIERARCHICAL FRAME BASED VIDEO COMPRESSED SENSING
Wenbin CHE, *Dept. of Computer Science and Technology, Harbin Institute of Technology*
Xinwei GAO, *Dept. of Computer Science and Technology, Harbin Institute of Technology*
Xiaopeng FAN, *Dept. of Computer Science and Technology, Harbin Institute of Technology*
Feng JIANG, *Dept. of Computer Science and Technology, Harbin Institute of Technology*
Debin ZHAO, *Dept. of Computer Science and Technology, Harbin Institute of Technology*

TEC-P24.5 – COMPRESSIVE SENSING OF VIDEO WITH WEIGHTED SENSING AND MEASUREMENT ALLOCATION
Khanh DINH, *Sungkyunkwan University*
Thuong NGUYEN CANH, *Sungkyunkwan University*
Byeungwoo JEON, *Sungkyunkwan University*

TEC-P24.6 – MULTI-SCALE/MULTI-RESOLUTION KRONECKER COMPRESSIVE IMAGING
Thuong NGUYEN CANH, *School of Electronic and Electrical Engineering, Sungkyunkwan University*
Khanh DINH, *School of Electronic and Electrical Engineering, Sungkyunkwan University*
Byeungwoo JEON, *School of Electronic and Electrical Engineering, Sungkyunkwan University*

ARS-O13: Multimedia Retrieval and Indexing

Monday, 16:30-18:30
LECTURE
Room: **205A**
Session Chair(s): Edward J. DELP, *Purdue University*

16:30 **ARS-O13.1 –** CONTENT BASED VIDEO RETRIEVAL ON MOBILE DEVICES: HOW MUCH CONTENT IS ENOUGH?
Khalid TAHBOUB, *Purdue University*
Neeraj GADGIL, *Purdue University*
Edward J. DELP, *Purdue University*

16:50 **ARS-O13.2 –** CROSS-MODALITY HASHING WITH PARTIAL CORRESPONDENCE
Yun GU, *Shanghai Jiao Tong Univeristy*
Haoyang XUE, *Shanghai Jiao Tong Univeristy*
Jie YANG, *Shanghai Jiao Tong Univeristy*
Pengfei SHI, *Shanghai Jiao Tong University*

17:10 ★ **ARS-O13.3 –** ONLINE SUPERVISED HASHING
Fatih CAKIR, *Boston University*
Stan SCLAROFF, *Boston University*

17:30 **ARS-O13.4 –** A COMPACT SHOT REPRESENTATION FOR VIDEO SEMANTIC INDEXING
Jinzhuo WANG, *Peking University Shenzhen Graduate School*
Wenmin WANG, *Peking University Shenzhen Graduate School*
Ronggang WANG, *Peking University Shenzhen Graduate School*
Wen GAO, *Peking University*

17:50 **ARS-O13.5 –** RANK-AWARE GRAPH FUSION WITH CONTEXTUAL DISSIMILARITY MEASUREMENT FOR IMAGE RETRIEVAL
Xu XIE, *USTC*
Wengang ZHOU, *University of Science and Technology of China*
Houqiang LI, *USTC*
Qi TIAN, *University of Texas at San Antonio*

18:10 **ARS-O13.6 –** HIERARCHICAL MULTI-VLAD FOR IMAGE RETRIEVAL
Yitong WANG, *The Institute of Digital Media, School of EE&CS, Peking University*
Ling-Yu DUAN, *The Institute of Digital Media, School of EE&CS, Peking University*
Jie LIN, *Institute for Infocomm Research*
Zhe WANG, *The Institute of Digital Media, School of EE&CS, Peking University*
Tiejun HUANG, *The Institute of Digital Media, School of EE&CS, Peking University*

ARS-O15: Object Tracking

Monday, 16:30-18:30
LECTURE
Room: **204B**
Session Chair(s): Guillaume-Alexandre BILODEAU, *École polytechnique de Montréal*

16:30 **ARS-O15.1 –** MULTIPLE MODEL ADAPTIVE VISUAL TRACKING WITH CORRELATION FILTERS
Gokhan TANISIK, *ASELSAN Inc.*
Erhan GUNDOGDU, *ASELSAN Inc.*

16:50 **ARS-O15.2 –** SEGMENT-WISE ONLINE LEARNING BASED ON GREEDY ALGORITHM FOR REAL-TIME MULTI-TARGET TRACKING
Changhoon LEE, *KAIST*
Chang D. YOO, *KAIST*

17:10 **ARS-O15.3 –** VISUAL TRACKING VIA MANIFOLD REGULARIZED LOCAL STRUCTURED SPARSE REPRESENTATION MODEL
Lingfeng WANG, *NLPR, Institute of Automation, Chinese Academy of Sciences*
Chunhong PAN, *NLPR, Institute of Automation, Chinese Academy of Sciences*

17:30 **ARS-O15.4 –** ROBUST VISUAL TRACKING USING JOINT SCALE-SPATIAL CORRELATION FILTERS
Mengdan ZHANG, *National Laboratory of Pattern Recognition, Institute of Automation*
Junliang XING, *National Laboratory of Pattern Recognition, Institute of Automation*
Jin GAO, *National Laboratory of Pattern Recognition, Institute of Automation*
Weiming HU, *National Laboratory of Pattern Recognition, Institute of Automation*

17:50 **ARS-O15.5 –** ROBUST MULTI-OBJECT TRACKING USING CONFIDENT DETECTIONS AND SAFE TRACKLETS
Ali TAALIMI, *University of Tennessee-Knoxville*
Hairong QI, *University of Tennessee-Knoxville*

18:10 **ARS-O15.6 –** MULTIPLE OBJECT TRACKING BASED ON SPARSE GENERATIVE APPEARANCEMODELING
Dorra RIAHI, *École Polytechnique de Montréal*
Guillaume-Alexandre BILODEAU, *École Polytechnique de Montréal*

ARS-O17: Saliency Analysis

Monday, 16:30-18:30
LECTURE
Room: **204A**
Session Chair(s): Jie YANG, *Shanghai Jiaotong University*

16:30 **ARS-O17.1 –** GEODESIC WEIGHTED BAYESIAN MODEL FOR SALIENT OBJECT DETECTION
Xiang WANG, *Department of Electronic Engineering, Tsinghua University*
Huimin MA, *Department of Electronic Engineering, Tsinghua University*
Xiaozhi CHEN, *Department of Electronic Engineering, Tsinghua University*

16:50 **ARS-O17.2 –** RGB-D SALIENCY DETECTION VIA MUTUAL GUIDED MANIFOLD RANKING
Haoyang XUE, *Shanghai Jiao Tong University*
Yun GU, *Shanghai Jiao Tong University*
Yijun LI, *Shanghai Jiao Tong University*
Jie YANG, *Shanghai Jiao Tong University*

17:10 **ARS-O17.3 –** CO-SALIENCY DETECTION VIA SIMILARITY-BASED SALIENCY PROPAGATION
Chenjie GE, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Keren FU, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Yijun LI, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Jie YANG, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Pengfei SHI, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Li BAI, *University of Nottingham*

17:30 **ARS-O17.4 –** UNSUPERVISED COSEGMENTATION BASED ON GLOBAL CLUSTERING AND SALIENCY
Lucas LATTARI, *Universidade Federal Fluminense*
Anselmo MONTENEGRO, *Universidade Federal Fluminense*
Cristina VASCONCELOS, *Universidade Federal Fluminense*

17:50 **ARS-O17.5 –** DICTIONARY LEARNING BASED SUPERPIXELS CLUSTERING FOR WEAKLY-SUPERVISED SEMANTIC SEGMENTATION
Peng YING, *CASIA*
Jing LIU, *CASIA*
Hanqing LU, *The Institute of Automation of the Chinese Academy of Sciences (CASIA)*

18:10 **ARS-O17.6 –** GROUP SALIENCY PROPAGATION FOR LARGE SCALE AND QUICK IMAGE CO-SEGMENTATION
Koteswar Rao JERRIPOTHULA, *Nanyang Technological University*
Jianfei CAI, *Nanyang Technological University*
Junsong YUAN, *Nanyang Technological University*

ARS-O20: Visualization and Image Rendering

Monday, 16:30-18:30
LECTURE
Room: **203**
Session Chair(s): Mujdat ÇETIN, *Sabanci University*

16:30 **ARS-O20.1 –** VOLUME VISUALIZATION FOR OUT-OF-CORE 3D IMAGES BASED ON SEMI-ADAPTIVE PARTITIONING
Jian XUE, *University of the Chinese Academy of Sciences*
Ke LU, *University of the Chinese Academy of Sciences*

16:50 **ARS-O20.2 –** A FRAMEWORK FOR IMAGE-BASED ASSET GENERATION AND ANIMATION
Johannes FURCH, *Fraunhofer HHI*
Anna HILSMANN, *Fraunhofer HHI, Humboldt Universität zu Berlin*
Peter EISERT, *Fraunhofer HHI, Humboldt Universität zu Berlin*

17:10 **ARS-O20.3 –** ITERATIVE MASK GENERATION METHOD FOR HANDLING OCCLUSION IN OPTICAL FLOW ASSISTED VIEW INTERPOLATION
Hoda REZAEE KAVIANI, *McMaster University*
Shahram SHIRANI, *McMaster University*

17:30 **ARS-O20.4 –** FAST SPARSE EDGE-BASED INTRINSIC IMAGE DECOMPOSITION GUIDED BY CHROMATICITY GRADIENTS
Jinze YU, *The University of Tokyo*
Yoichi SATO, *The University of Tokyo*

17:50 **ARS-O20.5 –** SPARSE EDIT PROPAGATION FOR HIGH RESOLUTION IMAGE USING SUPPORT VECTOR MACHINES
Changjae OH, *Yonsei University*
Seungchul RYU, *Yonsei University*
Youngjung KIM, *Yonsei University*
Jihyun KIM, *LG Electronics*
Taewoong PARK, *LG Electronics*
Kwanghoon SOHN, *Yonsei University*

18:10 **ARS-O20.6 –** COLOR TO GRAYSCALE IMAGE CONVERSION USING MODULATION DOMAIN QUADRATIC PROGRAMMING
Chuong NGUYEN, *University of Oklahoma*
Joseph HAVLICEK, *University of Oklahoma*

ARS-O10: Learning I

Monday, 16:30-18:30
LECTURE
Room: **202**
Session Chair(s): Markus FLIERL, *KTH Royal Institute of Technology*

16:30 **ARS-O10.1 –** CATEGORIZATION OF CLOUD IMAGE PATCHES USING AN IMPROVED TEXTON-BASED APPROACH
Soumyabrata DEV, *Nanyang Technological University Singapore*
Yee Hui LEE, *Nanyang Technological University Singapore*
Stefan WINKLER, *Advanced Digital Sciences Center (ADSC), University of Illinois at Urbana-Champaign*

16:50 **ARS-O10.2 –** LOCALITY SENSITIVE DISCRIMINATIVE DICTIONARY LEARNING
Jun GUO, *School of Information and Communication Engineering, Dalian University of Technology*
Yanqing GUO, *School of Information and Communication Engineering, Dalian University of Technology*
Yi LI, *School of Information and Communication Engineering, Dalian University of Technology*
Bo WANG, *School of Information and Communication Engineering, Dalian University of Technology*
Ming LI, *School of Information and Communication Engineering, Dalian University of Technology*

17:10 **ARS-O10.3 –** MAX-MARGIN ANALYSIS BASED PATCH SAMPLING FOR DISCOVERY OF MID-LEVEL PARTS
Lingxiao YANG, *Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China*
Xiaohua XIE, *Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China*

17:30 ★ **ARS-O10.4 –** CLASSIFICATION BASED ON WEIGHTED SPARSE REPRESENTATION USINGSMOOTHED L0 NORM WITH NON-NEGATIVE COEFFICIENTS
Rahman KHORSANDI, *University Of Miami*
Mohamed ABDEL-MOTTALEB, *University Of Miami*

17:50 **ARS-O10.5 –** MULTIVARIATE TEXTURE DISCRIMINATION USING A PRINCIPAL GEODESIC CLASSIFIER
Aqsa SHABBIR, *Ghent University*
Geert VERDOOLAEGE, *Ghent University*

18:10 ★ **ARS-O10.6 –** CLASS NOISE REMOVAL AND CORRECTION FOR IMAGE CLASSIFICATION USING ENSEMBLE MARGIN
Wei FENG, *Bordeaux INP*
Samia BOUKIR, *Bordeaux INP*

ARS-P18: Indexing and Retrieval

Monday, 16:30-18:30
POSTER
Room: **POSTER B**
Session Chair(s): Nicolas TSAPATSOULIS, *Cyprus University of Technology*

ARS-P18.1 – UNSUPERVISED SPORTS VIDEO PARTICLES ANNOTATION BASED ON SOCIAL LATENT SEMANTIC ANALYSIS
Klimis NTALIANIS, *Athens University of Applied Sciences*
Nicolas TSAPATSOULIS, *Cyprus University of Technology*

ARS-P18.2 – EXTRACTION OF HIERARCHICAL STRUCTURE OF WEB COMMUNITIES INCLUDING SALIENT KEYWORD ESTIMATION FOR WEB VIDEO RETRIEVAL
Ryosuke HARAKAWA, *Hokkaido University*
Takahiro OGAWA, *Hokkaido University*
Miki HASEYAMA, *Hokkaido University*

★ **ARS-P18.3 –** SEARCH AND RETRIEVAL OF MULTI-MODAL DATA ASSOCIATED WITH IMAGE-PARTS
Niloufar POURIAN, *Department of Electrical and Computer Engineering, University of California at Santa Barbara*
S. KARTHIKEYAN, *Department of Electrical and Computer Engineering, University of California at Santa Barbara*
B.S. MANJUNATH, *Department of Electrical and Computer Engineering, University of California at Santa Barbara*

ARS-P18.4 – ACCELERATING CDVS EXTRACTION ON MOBILE PLATFORM
Shen ZHANG, *Peking University Shenzhen Graduate School*
Ronggang WANG, *Peking University Shenzhen Graduate School*
Qiusi WANG, *Peking University Shenzhen Graduate School*
Wenmin WANG, *Peking University Shenzhen Graduate School*

ARS-P18.5 – ATTRIBUTE CONSTRAINED SUBSPACE LEARNING
Mohammadreza BABAEE, *Institute for Human-Machine Communication, Technische Universität München*
Maryam BABAEE, *Dept. of Artificial Intelligence, Faculty of Computer Engineering, University of Isfahan*
Daniel MERGET, *Institute for Human-Machine Communication, Technische Universität München*
Philipp TIEFENBACHER, *Institute for Human-Machine Communication, Technische Universität München*
Gerhard RIGOLL, *Institute for Human-Machine Communication, Technische Universität München*

★ **ARS-P18.6 –** MULTIMEDIA RETRIEVAL VIA DEEP LEARNING TO RANK
Xueyi ZHAO, *Zhejiang University*
Xi LI, *Zhejiang University*
Zhongfei ZHANG, *Zhejiang University*

ARS-P3: Biometric Applications

Monday, 16:30-18:30
POSTER
Room: **POSTER C**

Session Chair(s): Patrizio CAMPISI, *Università degli Studi Roma TRE*

ARS-P3.1 – COMMON SPARSE REPRESENTATION-BASED ROBUST MULTIMODAL BIOMETRICS RECOGNITION
Heng ZHANG, *University Of Maryland, College Park*
Vishal PATEL, *University of Maryland Institute for Advanced Computer Studies*
Rama CHELLAPPA, *University Of Maryland, College Park*

ARS-P3.2 – ORTHOGONAL SELF-GUIDED SIMILARITY PRESERVING PROJECTIONS
Xiaozhao FANG, *Bio-Computing Research Center, Shenzhen Graduate School, Harbin Institute of Technology*
Yong XU, *Bio-Computing Research Center, Shenzhen Graduate School, Harbin Institute of Technology*
Zheng ZHANG, *Bio-Computing Research Center, Shenzhen Graduate School, Harbin Institute of Technology*
Zhihui LAI, *College of Computer Science and Software Engineering, Shenzhen University*
Linlin SHEN, *College of Computer Science and Software Engineering, Shenzhen University*

ARS-P3.3 – SUBJECT IDENTIFICATION BASED ON EEG RESPONSES TO VIDEO STIMULI
Philip DAVIS, *New Mexico State University*
Charles CREUSERE, *New Mexico State University*
Jim KROGER, *New Mexico State University*

ARS-P3.4 – SEMANTICS CONSTRAINED DICTIONARY LEARNING FOR SIGNER-INDEPENDENT SIGN LANGUAGE RECOGNITION
Fang YIN, *Key Lab of Intelligent Information Processing of Chinese Academy of Sciences (CAS), Institute of*
Xiujuan CHAI, *Key Lab of Intelligent Information Processing of Chinese Academy of Sciences (CAS), Institute of*
Yu ZHOU, *Institute of Information Engineering, Chinese Academy of Sciences*
Xilin CHEN, *Key Lab of Intelligent Information Processing of Chinese Academy of Sciences (CAS)*

ARS-P3.5 – VALIDATION AND RELIABILITY OF THE DISCRIMINATIVE POWER OF GEOMETRIC WOOD LOG END FEATURES
Rudolf SCHRAML, *University of Salzburg*
Alexander PETUTSCHNIGG, *University of Applied Sciences Salzburg*
Andreas UHL, *University of Salzburg*

ARS-P3.6 – LANDMARK-BASED FISHER VECTOR REPRESENTATION FOR VIDEO-BASED FACE VERIFICATION
Jun-Cheng CHEN, *University of Maryland College Park*
Vishal M. PATEL, *University of Maryland College Park*
Rama CHELLAPPA, *University of Maryland College Park*

ARS-P31: Optical Flow and Motion Estimation

Monday, 16:30-18:30
POSTER
Room: **POSTER D**

Session Chair(s): Gaurav SHARMA, *University of Rochester*

ARS-P31.1 – APPROXIMATION ORDER OF THE LAP OPTICAL FLOW ALGORITHM
Thierry BLU, *The Chinese University of Hong Kong*
Pierre MOULIN, *University of Illinois at Urbana Champaign*
Christopher GILLIAM, *The Chinese University of Hong Kong*

ARS-P31.2 – IMPROVED SPECULAR REGIONS LOCALIZATION AND OPTICAL-FLOW BASEDMOTION ESTIMATION VIA JOINT PROCESSING
Ahmed ELLIETHY, *University of Rochester*
Gaurav SHARMA, *University of Rochester*

ARS-P31.3 – RATE-DISTORTION OPTIMIZED OPTICAL FLOW ESTIMATION
Sean YOUNG, *UNSW*
David TAUBMAN, *UNSW*

ARS-P31.4 – SUPERPIXEL MATCHING-BASED DEPTH PROPAGATION FOR 2D-TO-3D CONVERSION WITH JOINT BILATERAL FILTERING
Cheolkon JUNG, *Xidian University*
Jiji CAI, *Xidian University*

ARS-P31.5 – A HYBRID MOTION ESTIMATION TECHNIQUE FOR FISHEYE VIDEO SEQUENCES BASED ON EQUISOLID RE-PROJECTION
Andrea EICHENSEER, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*
Michel BÄTZ, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*
Jürgen SEILER, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*
André KAUP, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*

ARS-P31.6 – MOTION ESTIMATION VIA HIERARCHICAL BLOCK MATCHING AND GRAPH CUT
Amin ZHENG, *Hong Kong University of Science and Technology*
Yuan YUAN, *Hong Kong University of Science and Technology*
Sunil Prasad JAISWAL, *Hong Kong University of Science and Technology*
Oscar C. AU, *Hong Kong University of Science and Technology*

ARS-P7: Face and Gesture I

Monday, 16:30-18:30
POSTER
Room: **POSTER H**

Session Chair(s): Janusz KONRAD, *Boston University*

ARS-P7.1 – A ROBUST GESTURE RECOGNITION USING HAND LOCAL DATA AND SKELETON TRAJECTORY.
Edwin ESCOBEDO CARDENAS, *FEDERAL UNIVERSITY OF OURO PRETO*
Guillermo CAMARA CHAVEZ, *FEDERAL UNIVERSITY OF OURO PRETO*

ARS-P7.2 – MAXIMUM ENTROPY REGULARIZED GROUP COLLABORATIVE REPRESENTATION FOR FACE RECOGNITION
Zhong ZHAO, *Sun Yat-sen University*
Guocan FENG, *Sun Yat-sen University*
Lifang ZHANG, *Sun Yat-sen University*
Jiehua ZHU, *Georgia Southern University*

ARS-P7.3 – PARETO-OPTIMAL DISCRIMINANT ANALYSIS
Felix JUEFEI-XU, *Carnegie Mellon University*
Marios SAVVIDES, *Carnegie Mellon University*

ARS-P7.4 – FACIAL LANDMARK DETECTION VIA CASCADE MULTI-CHANNEL CONVOLUTIONAL NEURAL NETWORK
Hou QIQI, *Institute of Artificial Intelligence and Robotics, Xi'an Jiaotong University*
Wang JINJUN, *Institute of Artificial Intelligence and Robotics, Xi'an Jiaotong University*
Cheng LELE, *Institute of Artificial Intelligence and Robotics, Xi'an Jiaotong University*
Gong YIHONG, *Institute of Artificial Intelligence and Robotics, Xi'an Jiaotong University*

ARS-P7.5 – FACIAL POINT DETECTION USING CONVOLUTIONAL NEURAL NETWORKS TRANSFERRED FROM A HETEROGENEOUS TASK
Takayoshi YAMASHITA, *Chubu University*
Taro WATASUE, *Tome R&D*
Yuji YAMAUCHI, *Chubu University*
Hironobu FUJIYOSHI, *Chubu University*

ARS-P7.6 – FACIAL POINT DETECTION BASED ON A CONVOLUTIONAL NEURAL NETWORK WITH OPTIMAL MINI-BATCH PROCEDURE
Takayoshi YAMASHITA, *Chubu University*
Masatoshi KIMURA, *Chubu University*
Yuji YAMAUCHI, *Chubu University*
Hironobu FUJIYOSHI, *Chubu University*

ARS-P50: Face and Gesture II

Monday, 16:30-18:30
POSTER
Room: **POSTER G**
Session Chair(s): Janusz KONRAD, *Boston University*

ARS-P50.1 – WHOLE SPACE SUBCLASS DISCRIMINANT ANALYSIS FOR FACE RECOGNITION
Bappaditya MANDAL, *Institute for Infocomm Research, A*STAR*
Liyuan LI, *Institute for Infocomm Research, A*STAR*
Vijay CHANDRASEKHAR, *Institute for Infocomm Research, A*STAR*
Joo Hwee LIM, *Institute for Infocomm Research, A*STAR*

ARS-P50.2 – FAST AND EXACT BI-DIRECTIONAL FITTING OF ACTIVE APPEARANCE MODELS
Jean KOSSAIFI, *Imperial College London*
Georgios TZIMIROPOULOS, *Imperial College London*
Maja PANTIC, *Imperial College London*

ARS-P50.3 – TWO-LEVEL MULTI-TASK METRIC LEARNING WITH APPLICATION TO MULTI-CLASSIFICATION
Xuewu ZHANG, *Shenzhen Graduate School, Peking University*
Hong LIU, *Shenzhen Graduate School, Peking University*
Pingping WU, *Shenzhen Graduate School, Peking University*

ARS-P50.4 – HAND AND OBJECT SEGMENTATION FROM RGB-D IMAGES FOR INTERACTION WITH PLANAR SURFACES
Henrique WEBER, *Federal University of Rio Grande do Sul*
Claudio Rosito JUNG, *Federal University of Rio Grande do Sul*
Dan GELB, *HP Palo Alto*

ARS-P50.5 – LEVERAGING SHAPE AND DEPTH IN USER AUTHENTICATION FROM IN-AIR HAND GESTURES
Jonathan WU, *Boston University*
James CHRISTIANSON, *Boston University*
Janusz KONRAD, *Boston University*
Prakash ISHWAR, *Boston University*

ARS-P50.6 – UTILIZING THE BEZIER DESCRIPTORS FOR HAND GESTURE RECOGNITION
Omer Rashid AHMAD, *University of Magdeburg*
Ayoub AL-HAMADI, *University of Magdeburg*

ARS-P6: Edge and Shape Detection

Monday, 16:30-18:30
POSTER
Room: **POSTER F**

Session Chair(s): A.N. RAJAGOPALAN, *IIT Madras*

ARS-P6.1 – CANNYLINES: A PARAMETER-FREE LINE SEGMENT DETECTOR
Xiaohu LU, *School of Remote Sensing and Information Engineering*
Jian YAO, *School of Remote Sensing and Information Engineering, Wuhan University*
Kai LI, *School of Remote Sensing and Information Engineering, Wuhan University*
Li LI, *School of Remote Sensing and Information Engineering, Wuhan University*

ARS-P6.2 – ELLIPSE-SPECIFIC FITTING BY RELAXING THE 3L CONSTRAINTS WITH SEMIDEFINITE PROGRAMMING
Jiangpeng RONG, *Peking University*
Sen YANG, *Peking University*
Xiang MEI, *Peking University*
Xianghua YING, *Peking University*
Shiyao HUANG, *Peking University*
Hongbin ZHA, *Peking University*

ARS-P6.3 – TAPPING MOTION BLUR FOR ROBUST NORMAL ESTIMATION OF PLANAR SCENES
Subeesh VASU, *INDIAN INSTITUTE OF TECHNOLOGY MADRAS*
A.N. RAJAGOPALAN, *INDIAN INSTITUTE OF TECHNOLOGY MADRAS*
Gunasekaran SEETHARAMAN, *AFRL/RIEA*

ARS-P6.4 – EDGE DETECTION METHOD OF GAUSSIAN BLOCK DISTANCE
Jia DI, *Liaoing Technical University*
Xiao CHENG-LONG, *School of software, Liaoing Technical University, Liaoning, China*
Sun JIN-GUANG, *School of Electronic and Information Engineering, Liaoing Technical University*

ARS-P6.5 – ROBUST STATISTICAL SHAPE ANALYSIS BASED ON THE TANGENT SHAPE SPACE
Michel ABBOUD, *UEB, École Nationale d'Ingénieurs de Brest (ENIB)*
Abdesslam BENZINOU, *UEB, École Nationale d'Ingénieurs de Brest (ENIB)*
Kamal NASREDDINE, *UEB, École Nationale d'Ingénieurs de Brest (ENIB)*
Mustapha JAZAR, *LaMA-Liban, Lebanese University*

ARS-P6.6 – TEMPLATE-BASED STATISTICAL SHAPE MODELLING ON DEFORMATION SPACE
Girum DEMISSE, *University of Luxembourg*
Djamila AOUADA, *University of Luxembourg*
Bjorn OTTERSTEN, *University of Luxembourg*

ARS-P9: Face Processing

Monday, 16:30-18:30
POSTER
Room: **POSTER E**

Session Chair(s): Mohsen ARDABILIAN, *École Centrale de Lyon*

ARS-P9.1 – L1-GRASSMANN MANIFOLDS FOR ROBUST FACE RECOGNITION
Matthew JOHNSON, *Rochester Institute of Technology*
Andreas SAVAKIS, *Rochester Institute of Technology*

ARS-P9.2 – REFLECTANCE SPECTRA BASED SKIN AND NON-SKIN CLASSIFICATION
Wei CHEN, *École Centrale de Lyon*
Mohsen ARDABILIAN, *École Centrale de Lyon*
Abdelmalek ZINE, *École Centrale de Lyon*

ARS-P9.3 – FACIAL AGE ESTIMATION VIA EXTENDED CURVATURE GABOR FILTER
Jiwhan KIM, *Korea Advanced Institute of Science and Technology*
Dongyoon HAN, *Korea Advanced Institute of Science and Technology*
Sungryull SOHN, *Electronics and Telecommunications Research Institute*
Junmo KIM, *Korea Advanced Institute of Science and Technology*

ARS-P9.4 – CROSS-POSE COLOR FACIAL EXPRESSION RECOGNITION USING TRANSDUCTIVE TRANSFER LINEAR DISCRIMINAT ANALYSIS
Wenming ZHENG, *Southeast University*
Xiaoyan ZHOU, *Nanjing University of Information Science and Technology*

ARS-P9.5 – FACIAL LANDMARK DETECTION VIA POSE-INDUCED AUTO-ENCODER NETWORKS
Yu CHEN, *Nanjing University of Science and Technology*
Wei LUO, *Nanjing University of Science and Technology*
Jian YANG, *Nanjing University of Science and Technology*

ARS-P9.6 – FACE DETECTION AND LANDMARK LOCALIZATION USING BILAYER TREE STRUCTURED MODEL
Gee-Sern HSU, *National Taiwan University of Science and Technology*
Kai-Hsiang CHANG, *National Taiwan University of Science and Technology*
Shih-Chieh HUANG, *National Taiwan University of Science and Technology*
Shang-Luen CHUNG, *National Taiwan University of Science and Technology*

COM-P7: Video Streaming

Monday, 16:30-18:30
POSTER
Room: **POSTER 0**

Session Chair(s): Yago SANCHEZ, *Fraunhofer HHI*

COM-P7.1 – AN EXTENSION TO THE PRO-MPEG COP3 CODES FOR UNEQUAL ERROR PROTECTION OF REAL-TIME VIDEO TRANSMISSION
César DÍAZ, *Grupo de Tratamiento de Imágenes - Universidad Politécnica de Madrid*
Julián CABRERA, *Grupo de Tratamiento de Imágenes - Universidad Politécnica de Madrid*
Fernando JAUREGUIZAR, *Grupo de Tratamiento de Imágenes - Universidad Politécnica de Madrid*
Narciso GARCÍA, *Grupo de Tratamiento de Imágenes - Universidad Politécnica de Madrid*

COM-P7.2 – COMPRESSED DOMAIN VIDEO PROCESSING FOR TILE BASED PANORAMIC STREAMING USING HEVC
Yago SANCHEZ DE LA FUENTE, *Fraunhofer HHI*
Robert SKUPIN, *Fraunhofer HHI*
Thomas SCHIERL, *Fraunhofer HHI*

COM-P7.3 – PREDICTIVE PREFETCHING FOR MPEG DASH OVER LTE NETWORKS
Tianyi XU, *InterDigital Communications, Inc*
Liangping MA, *InterDigital Communications, Inc*

COM-P7.4 – UNEQUAL ERROR PROTECTION FOR REAL-TIME VIDEO STREAMING USING EXPANDING WINDOW REED-SOLOMON CODE
Yufeng GENG, *Peking University*
Xinggong ZHANG, *Peking University*
Chao ZHOU, *Huawei*
Zongming GUO, *Peking University*

COM-P7.5 – IN-NETWORK VIEW RE-SAMPLING FOR INTERACTIVE FREE VIEWPOINT VIDEO STREAMING
Laura TONI, *EPFL*
Gene CHEUNG, *National Insitute of Informatics*
Pascal FROSSARD, *EPFL*

COM-P7.6 – A FAIRNESS-AWARE SMOOTH RATE ADAPTATION APPROACH FOR DYNAMIC HTTP STREAMING
Li LIU, *Peking University*
Chao ZHOU, *HuaiWei*
Xinggong ZHANG, *Peking University*
Zongming GUO, *Peking University*

ELI-P4: Detection and Classification

Monday, 16:30-18:30
POSTER
Room: **POSTER A**

Session Chair(s): Michael H.F. WILKINSON, *University of Groningen*

ELI-P4.1 – MULTI-LOOK PROCESSING OF HIGH-RESOLUTION SAS DATA FOR IMPROVED TARGET DETECTION PERFORMANCE
David WILLIAMS, *NATO STO Centre for Maritime Research and Experimentation (CMRE)*
Alan HUNTER, *University of Bath*

ELI-P4.2 – LEARNING OCCLUSION PATTERNS USING SEMANTIC PHRASES FOR OBJECT DETECTION
Liu JINDE, *Institute of Automation, Chinese Academy of Sciences*
Huang KAIQI, *Institute of Automation, Chinese Academy of Sciences*
Tan TIENIU, *Institute of Automation, Chinese Academy of Sciences*

ELI-P4.3 – IMPROVING BACKGROUND ESTIMATION FOR FAINT ASTRONOMICAL OBJECT DETECTION
Paul TEENINGA, *University of Groningen*
Ugo MOSCHINI, *University of Groningen*
Scott TRAGER, *University of Groningen*
Michael H.F. WILKINSON, *University of Groningen*

ELI-P4.4 – AUTOMATIC DETECTION OF MARTIAN DUST STORMS FROM HETEROGENEOUS DATA BASED ON DECISION LEVEL FUSION
Keisuke MAEDA, *Hokkaido University*
Takahiro OGAWA, *Hokkaido University*
Miki HASEYAMA, *Hokkaido University*

ELI-P4.5 – MULTI-INSTANCE LEARNING VIA INSTANCE-BASED AND BAG-BASED REPRESENTATION TRANSFORMATIONS
Liming YUAN, *School of Computer and Communication Engineering,Tianjin University of Technology*
Lu ZHAO, *School of Computer and Information Engineering,Tianjin Chengjian University*
Haixia XU, *School of Computer and Communication Engineering, Tianjin University of Technology*

ELI-P4.6 – REGULARIZATION OF DEEP NEURAL NETWORKS USING A NOVEL COMPANION OBJECTIVE FUNCTION
Weichen SUN, *Beijing University of Posts and Telecommunications*
Fei SU, *Beijing University of Posts and Telecommunications*

IFS-O1: Forensic Video and Surveillance

Monday, 16:30-18:30
LECTURE
Room: **205C**
Session Chair(s): Touradj EBRAHIMI, *EPFL*

16:30 IFS-O1.1 – ABNORMAL EVENT DETECTION VIA ADAPTIVE CASCADE DICTIONARY LEARNING
Hui WEN, *Beijing Key Laboratory of IOT, Institute of Information Engineering, CAS*
Shiming GE, *Beijing Key Laboratory of IOT, Institute of Information Engineering, CAS*
Shuixian CHEN, *Beijing Key Laboratory of IOT, Institute of Information Engineering, CAS*
Hongtao WANG, *Beijing Key Laboratory of IOT, Institute of Information Engineering, CAS*
Limin SUN, *Beijing Key Laboratory of IOT, Institute of Information Engineering, CAS*

16:50 IFS-O1.2 – CBRA: COLOR-BASED RANKING AGGREGATION FOR PERSON RE-IDENTIFICATION
Raphael PRATES, *Universidade Federal de Minas Gerais*
William Robson SCHWARTZ, *Universidade Federal de Minas Gerais*

17:10 ★ IFS-O1.3 – EXPLOITING MULTIPLE DETECTIONS TO LEARN ROBUST BRIGHTNESS TRANSFER FUNCTIONS IN RE-IDENTIFICATION SYSTEMS
Amran BHUIYAN, *Istituto Italiano di Tecnologia*
Alessandro PERINA, *Istituto Italiano di Tecnologia*
Vittorio MURINO, *Istituto Italiano di Tecnologia*

17:30 IFS-O1.4 – IMPACT OF MINI-DRONE BASED VIDEO SURVEILLANCE ON INVASION OF PRIVACY
Pavel KORSHUNOV, *EPFL*
Margherita BONETTO, *University of Trieste*
Touradj EBRAHIMI, *EPFL*
Giovanni RAMPONI, *University of Trieste*

17:50 IFS-O1.5 – PREDICTIVE MULTIPLE MOTION FIELDS FOR TRAJECTORY COMPLETION: APPLICATION TO SURVEILLANCE SYSTEMS.
Manya AFONSO, *Instituto Superior Tecnico, University of Lisbon, Portugal*
Jacinto NASCIMENTO, *Instituto Superior Tecnico, University of Lisbon*

18:10 IFS-O1.6 – TEXTURE-BASED VESSEL CLASSIFIER FOR ELECTRO-OPTICAL SATELLITE IMAGERY
Virginia FERNANDEZ ARGUEDAS, *European Commission - Joint Research Centre*

SNT-S3: Show & Tell III

Monday, 16:30-18:30
SHOW & TELL Room: **SHOW & TELL**
Session Chair(s): Fabrice LABEAU, *McGill University*

SNT-S3.1 – SHAPE PRIOR IMAGE SEGMENTATION AND DISOCCLUSION
Frederick PARK, *Whittier College*
In this demonstration we will use a cliques based shape prior incorporated into a polygonal implementation of the Mumford-Shah (MS) functional for image segmentation and disocclusion. The demo consists of 2 parts where we will show curve evolution from the proposed method. Part 1 is a segmentation example while part 2 involves disocclusion.

SNT-S3.2 – IMAGE CIPHERING TO ENSURE PRIVACY ON OPEN IMAGE-SHARING PLATFORMS
Gaetan LE GUELVOUIT, *B-Com, Digital Trust & Identity Labs*
Kun HE, *B-COM*
Cyrielle FERON, *B-COM*
Christophe BIDAN, *B-COM*
We present in this demonstration an application that gives user empowerment and photo privacy controls on image-sharing services. It features an image-ciphering algorithm with the ability to be robust to lossy compression (e.g. JPEG), and a key management server, which controls access.

SNT-S3.3 – A COMPARISON OF ITERATIVE COMPRESSIVE SENSING RECOVERY ALGORITHMS
Chris METZLER, *Rice Univeristy*
We compare various iterative compressive sensing recovery algorithms across multiple iterations. We demonstrate how our denoising-based approach serves to regularize intermediate solutions.

SNT-S3.4 – DEEP STRUCTURED LEARNING FOR MASS SEGMENTATION IN MAMMOGRAMS
Neeraj DHUNGEL, *University of Adelaide*
In this demonstration, we will present a novel method for segmentation of breast masses from mammograms using deep learning and structured prediction. We can see that combining deep learning with the structured predictions models using CRF and SSVM produces state of the art result in segmentation of mass in mammograms from publicly available datasets.

SS8-O1: Big Data Processing and Analysis for Film and Media Production

Monday, 16:30-18:30
LECTURE Room: **205B**
Session Chair(s): Anastasios TEFAS, *Aristotle University of Thessaloniki*

16:30 SS8-O1.5 – COMBINED 2D AND 3D WEB-BASED VISUALISATION OF ON-SET BIG MEDIA DATA
Alun EVANS, *Universitat Pompeu Fabra*
Javi AGENJO, *Universitat Pompeu Fabra*
Josep BLAT, *Universitat Pompeu Fabra*

16:50 SS8-O1.2 – KERNEL MATRIX TRIMMING FOR IMPROVED KERNEL K-MEANS CLUSTERING
Nikolaos TSAPANOS, *Aristotle University of Thessaloniki*
Anastasios TEFAS, *Aristotle University of Thessaloniki*
Nikolaos NIKOLAIDIS, *Aristotle University of Thessaloniki*
Ioannis PITAS, *Aristotle University of Thessaloniki*

17:10 **SS8-O1.4 –** QUALITY ASSURANCE IN LARGE COLLECTIONS OF VIDEO SEQUENCES
Lukas POLOK, *FIT, Brno University of Technology*
Lukas KLICNAR, *Brno University of Technology, Faculty of Information Technology*
Vitezslav BERAN, *Brno University of Technology, Faculty of Information Technology*

17:30 **SS8-O1.3 –** COVERAGE EVALUATION OF CAMERA NETWORKS FOR FACILITATING BIG-DATA MANAGEMENT IN FILM PRODUCTION
Evren IMRE, *University of Surrey*
Adrian HILTON, *University of Surrey*

17:50 ★ **SS8-O1.1 –** MULTI-MODAL BIG-DATA MANAGEMENT FOR FILM PRODUCTION
Hansung KIM, *University of Surrey*
Simon PABST, *Double Negative Ltd.*
Justin SNEDDON, *Double Negative Ltd.*
Ted WAINE, *Double Negative Ltd.*
Jeff CLIFFORD, *Double Negative Ltd.*
Adrian HILTON, *University of Surrey*

TEC-P10: Image Recovery and Enhancement

Monday, 16:30-18:30
POSTER
Room: **POSTER N**

Session Chair(s): Ricardo DE QUEIROZ, *Universidade de Brasilia*

★ **TEC-P10.1 –** EXAMPLE-BASED ENHANCEMENT OF DEGRADED VIDEO
Edson Mintsu HUNG, *Universidade de Brasilia*
Diogo GARCIA, *Universidade de Brasilia*
Ricardo DE QUEIROZ, *Universidade de Brasilia*

TEC-P10.2 – AUTOMATIC CONTRAST ENHANCEMENT BY VARIATIONAL MINIMAX OPTIMIZATION
Yongjian YU, *Varian Medical Systems*
Jue WANG, *Union College*

TEC-P10.3 – DARK IMAGE ENHANCEMENT BASED ON PAIRWISE TARGET CONTRAST AND MULTI-SCALE DETAIL BOOSTING
Youngbae KIM, *Korea University*
Yeong Jun KOH, *Korea University*
Chulwoo LEE, *Korea University*
Sehoon KIM, *Samsung Electronics*
Chang-Su KIM, *Korea University*

★ **TEC-P10.4 –** EFFICIENT REGRESSION PRIORS FOR REDUCING IMAGE COMPRESSION ARTIFACTS
Rasmus ROTHE, *ETH Zurich*
Radu TIMOFTE, *ETH Zurich*
Luc VAN GOOL, *ETH Zurich*

TEC-P10.5 – FAST SINGLE IMAGE DEHAZING WITH DOMAIN TRANSFORMATION-BASED EDGE-PRESERVING FILTER AND WEIGHED QUADTREE SUBDIVISION
Boyang QIN, *Beijing University of Posts and Telecommunications*
Zhitong HUANG, *Beijing University of Posts and Telecommunications*
Fanxiang ZENG, *Beijing University of Posts and Telecommunications*
Yuefeng JI, *Beijing University of Posts and Telecommunications*

TEC-P10.6 – GRADIENT-DOMAIN IMAGE DECOMPOSITION FOR IMAGE RECOVERY
Makoto WATANABE, *The University of Kitakyushu*
Seisuke KYOCHI, *The University of Kitakyushu*
Shunsuke ONO, *Tokyo Institute of Technology*

TEC-P13: Image Restoration and Denoising

Monday, 16:30-18:30
POSTER
Room: **POSTER M**

Session Chair(s): Frédéric SUR, *Université de Lorraine*

TEC-P13.1 – IMAGE DEBLOCKING USING GROUP-BASED SPARSE REPRESENTATION AND QUANTIZATION CONSTRAINT PRIOR
Jian ZHANG, *Peking University*
Siwei MA, *Peking University*
Yongbing ZHANG, *Tsinghua University*
Wen GAO, *Peking University*

TEC-P13.2 – A BAYESIAN ADAPTIVE WEIGHTED TOTAL GENERALIZED VARIATION MODEL FOR IMAGE RESTORATION
Zhenbo LU, *University of Science and Technology of China*
Houqiang LI, *University of Science and Technology of China*
Weiping LI, *University of Science and Technology of China*

TEC-P13.3 – SECOND ORDER MUMFORD-SHAH MODEL FOR IMAGE DENOISING
Jinming DUAN, *University of Nottingham*
Yuchun DING, *University of Nottingham*
Jie YANG, *Shanghai Jiaotong University*
Zhenkuan PAN, *Qingdao University*
Li BAI, *University of Nottingham*

★ **TEC-P13.4 –** PSF ACCURACY MEASURE FOR EVALUATION OF BLUR ESTIMATION ALGORITHMS
Jan KOTERA, *UTIA AV CR*
Barbara ZITOVA, *UTIA AV CR*
Filip SROUBEK, *UTIA AV CR*

TEC-P13.5 – AN A-CONTRARIO APPROACH TO QUASI-PERIODIC NOISE REMOVAL
Frédéric SUR, *Université de Lorraine*

TEC-P30: Image Denoising and Recovery

Monday, 16:30-18:30
POSTER
Room: **POSTER L**

Session Chair(s): Takamichi MIYATA, *Chiba Institute of Technology*

TEC-P30.1 – SUPER RESOLUTION RECONSTRUCTION USING GRAPH LAPLACIAN PENALIZATION
Jun BAI, *Institute of Automation, Chinese Academy of Sciences*
Limin SHI, *Institute of Automation, Chinese Academy of Sciences*
Bangyu LI, *Institute of Automation, Chinese Academy of Sciences*
Shiming XIANG, *Institute of Automation, Chinese Academy of Sciences*
Chunhong PAN, *Institute of Automation, Chinese Academy of Sciences*

TEC-P30.2 – LOW-RANK REGULARIZED COLLABORATIVE FILTERING FOR IMAGE DENOISING
Mansour NEJATI, *Isfahan University of Technology*
Shadrokh SAMAVI, *Isfahan University of Technology*
S.M.Reza SOROUSHMEHR, *University of Michigan, Ann Arbor*
Kayvan NAJARIAN, *University of Michigan, Ann Arbor*

★ **TEC-P30.3 –** AUGMENTED LAGRANGIAN WITHOUT ALTERNATING DIRECTIONS:PRACTICAL ALGORITHMS FOR INVERSE PROBLEMS IN IMAGING
Rahul MOURYA, *University Jean Monnet, St Etienne*
Loic DENIS, *University Jean Monnet, St-Étienne*
Éric THIÉBAUT, *Centre de Recherche Astrophysique de Lyon CRAL / CNRS-UMR 5574, Observatoire de Lyon*
Jean-marie BECKER, *University Jean Monnet, St Etienne*

TEC-P30.4 – A MAXIMAL INTEREST-POINT STRATEGY APPLIED TO IMAGE ENHANCEMENT WITH EXTERNAL PRIORS
Oren KATZIR, *Technion - Israel Institute of Technology*
Guy GILBOA, *Technion - Israel Institute of Technology*

TEC-P30.5 – INTER-CHANNEL RELATION BASED VECTORIAL TOTAL VARIATION FOR COLOR IMAGE RECOVERY
Takamichi MIYATA, *Chiba Institute of Technology*

TEC-P8: Image and Video Restoration and Enhancement

Monday, 16:30-18:30
POSTER
Room: **POSTER J**

Session Chair(s): Sohail DIANAT, *Rochester Institute of Technology*

TEC-P8.1 – ANALYSIS ON SPECTRAL EFFECTS OF DARK-CHANNEL PRIOR FOR HAZE REMOVAL
Yuxiang SHEN, *McMaster University*
Xiaolin WU, *McMaster University*
Xiaowei DENG, *McMaster University*

TEC-P8.2 – MOTION DRIVEN TONAL STABILIZATION
Oriel FRIGO, *Université Paris Descartes*
Neus SABATER, *Technicolor*
Julie DELON, *Université Paris Descartes*
Pierre HELLIER, *Technicolor*

TEC-P8.3 – SPECULAR REFLECTION REMOVAL USING LOCAL STRUCTURAL SIMILARITY AND CHROMATICITY CONSISTENCY
Yongqiang ZHAO, *Northwestern Polytechnical University*
Qunnie PENG, *Northwestern Polytechnical University*
Jize XUE, *Northwestern Polytechnical University*
Seong G. KONG, *Sejong University*

TEC-P8.4 – RECOVERING INTRINSIC IMAGES FROM IMAGE SEQUENCES USING TOTAL VARIATION MODELS
Xiaohua XIE, *Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences*
Wenyong GONG, *Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China*
Minglun GONG, *Department of Computer Science, Memorial University of Newfoundland*
Tieru WU, *School of Mathematics, Jilin University, China*

TEC-P8.5 – SUPERPIXEL BASED PATCH MATCH FOR DIFFERENTLY EXPOSED IMAGES WITHMOVING OBJECTS AND CAMERA MOVEMENTS
Jinghong ZHENG, *Institute for Infocomm Research*
Zhengguo LI, *Institute for Infocomm Research*

★ **TEC-P8.6 –** SINGLE UNDERWATER IMAGE ENHANCEMENT USING DEPTH ESTIMATION BASED ON BLURRINESS
Yan-Tsung PENG, *University of California, San Diego*
Xiangyun ZHAO, *University of California, San Diego*
Pamela COSMAN, *University of California, San Diego*

TEC-P9: Image Enhancement and Segmentation

Monday, 16:30-18:30
POSTER
Room: **POSTER K**
Session Chair(s): Mary COMER, *Purdue University*

TEC-P9.1 – A MOTION-TEXTURE AWARE DENOISING FOR ECONOMIC HARDWARE DESIGN
Zheng YUAN, *Real Communications Inc*
Wujun CHEN, *Realtek Semiconductor Group*
Jun XIN, *Real Communications Inc*
Lingzhi LIU, *Real Communications Inc*
Weimin ZENG, *Real Communications Inc*
Eric CHAI, *Real Communications Inc*
Dapeng WU, *University of Florida*

TEC-P9.2 – HIGH DYNAMIC RANGE MAP ESTIMATION VIA FULLY CONNECTED RANDOM FIELDS WITH STOCHASTIC CLIQUES
Francis LI, *University of Waterloo*
Mohammad Javad SHAFIEE, *University of Waterloo*
Audrey CHUNG, *University of Waterloo*
Brendan CHWYL, *University of Waterloo*
Farnoud KAZEMZADEH, *University of Waterloo*
Alexander WONG, *University of Waterloo*
John ZELEK, *University of Waterloo*

TEC-P9.3 – CONTRAST ENHANCEMENT OF BACK-LIGHT IMAGES VIA A REGIONAL RANK-1 CONSTRAINT
Ja-Won SEO, *Samsung Electronics*
Seong Dae KIM, *Korea Advanced Institute of Science and Technology (KAIST)*

TEC-P9.4 – CHANNEL DETECTION IN MICROSCOPE IMAGES OF MATERIALS USING MARKEDPOINT PROCESS MODELING
Dae Woo KIM, *Purdue University*
Mary COMER, *Purdue University*

TEC-P9.5 – HALO CONTROL FOR LHE BASED LOCAL ADAPTIVE TONE MAPPING
Yuta KIMURA, *Hokkaido university*
Masayuki IKEBE, *Hokkaido university*

TEC-P9.6 – DETECTING SPECULAR HIGHLIGHTS IN DERMATOLOGICAL IMAGES
Ali MADOOEI, *Simon Fraser University*
Mark S. DREW, *Simon Fraser University*

CKTL-E: Banquet Cocktail

Monday, 19:00-20:00
Room: **FOYER 2**

SOCIAL EVENT
Session Chair(s): Paul FORTIER, *Laval University*

BQT-E: Banquet

Monday, 20:00-23:00
Room: **200AB**

SOCIAL EVENT
Session Chair(s): André MORIN, *Optelis*
Jean-Luc DUGELAY, *Eurecom*

TUESDAY SEPTEMBER 29

PLE-N2: Plenary – Advances in Computational Imaging

Tuesday, 09:00-10:00
Room: **200AB**

PLENARY

Session Chair(s): Stéphane COULOMBE, *École de technologie supérieure*
Kenneth ROSE, *University of California*

Presenter

Shree K. Nayar, *T. C. Chang Professor of Computer Science, Columbia University*

Summary

Computational imaging uses new optics to capture a coded image, and an appropriate algorithm to decode the captured image. This approach of manipulating images before there are recorded and processing recorded images before they are presented has three key benefits.

First, it enables us to implement imaging functionalities that would be difficult, if not impossible, to achieve using traditional imaging. Second, it can be used to significantly reduce the hardware complexity of an imaging system. Lastly, under appropriate imaging conditions, it allows us to break the limits of traditional imaging. In this talk, I will show recent examples of cameras that demonstrate these benefits.

ARS-O2: Classification II

Tuesday, 10:30-12:30
Room: **205B**

LECTURE

Session Chair(s): Jenny Benois-PINEAU, *LaBRI*

10:30 ★ **ARS-O2.1 –** SEMANTIC EMBEDDING SPACE FOR ZERO-SHOT ACTION RECOGNITION
Xun XU, *Queen Mary, University of London*
Timothy HOSPEDALES, *Queen Mary, University of London*
Shaogang GONG, *Queen Mary, University of London*

10:50 ARS-O2.2 – DEEP-PLANT: PLANT IDENTIFICATION WITH CONVOLUTIONAL NEURAL NETWORKS
Sue Han LEE, *University of Malaya*
Chee Seng CHAN, *University of Malaya*
Paul WILKIN, *Royal Botanic Gardens*
Paolo REMAGNINO, *Kingston University*

11:10 ARS-O2.3 – BRUSHSTROKE BASED SPARSE HYBRID CONVOLUTIONAL NEURAL NETWORKS FOR AUTHOR CLASSIFICATION OF CHINESE INK-WASH PAINTINGS
Meijun SUN, *Tianjin University*
Dong ZHANG, *Tianjin University*
Jinchang REN, *University of Strathclyde*
Zheng WANG, *Tianjin University*
Jesse J JIN, *Tianjin University*

11:30 **ARS-O2.4 –** PRE-TRAINING CONVOLUTIONAL NEURAL NETWORKS: IS FINE-TUNE ALWAYS PREQUISITE?
Yue HUANG, *Xiamen University*
Ruiwen WU, *Xiamen University*
Xinghao DING, *Xiamen University*

11:50 **ARS-O2.5 –** SEMI-SUPERVISED LEARNING BASED ON GROUP SPARSE FOR RELATIVE ATTRIBUTES
Hongxue YANG, *Dalian University of Technology*
Xiangwei KONG, *Dalian University of Technology*
Haiyan FU, *Dalian University of Technology*
Ming LI, *Dalian University of Technology*
Genping ZHAO, *Harbin Engineering University*

12:10 **ARS-O2.6 –** MULTI-CLASS WEATHER CLASSIFICATION ON SINGLE IMAGES
Zheng ZHANG, *Beijing University of Posts and Telecommunications*
Huadong MA, *Beijing University of Posts and Telecommunications*

ARS-O5: Face Recognition I

Tuesday, 10:30-12:30
LECTURE
Room: **205C**
Session Chair(s): Zheng-Hua TAN, *Aalborg University*

10:30 **ARS-O5.1 –** A ROBUST CONTOUR SAMPLING AND TENSOR-BASED APPROACH TO FACIAL BEARD AND MUSTACHE SHAPE SEGMENTATION AND MATCHING
Karanhaar SINGH, *Carnegie Mellon University*
Khoa LUU, *Carnegie Mellon University*
T. Hoang Ngan LE, *Carnegie Mellon University*
Marios SAVVIDES, *Carnegie Mellon University*

10:50 **ARS-O5.2 –** A FEATURE SUBTRACTION METHOD FOR IMAGE BASED KINSHIP VERIFICATION UNDER UNCONTROLLED ENVIRONMENTS
Xiaodong DUAN, *Aalborg University*
Zheng-Hua TAN, *Aalborg University*

11:10 **ARS-O5.3 –** AN EFFICIENT FACE CLASSIFICATION METHOD BASED ON SHARED AND CLASS-SPECIFIC DICTIONARY LEARNING
Jiuzhen LIANG, *Jiangnan University*
Wenjing LI, *Jiangnan University*
Qin WU, *Jiangnan University*
Yuxuan ZHOU, *Jiangnan University*
Xiuxiu XU, *Jiangnan University*
Nianbing WANG, *Jiangnan University*
Qi ZHOU, *Jiangnan University*

11:30 **ARS-O5.4 –** BOOSTING 3D LBP-BASED FACE RECOGNITION BY FUSING SHAPE AND TEXTURE DESCRIPTORS ON THE MESH
Claudio TORTORICI, *Khalifa University of Science Technology & Research*
Naoufel WERGHI, *Khalifa University of Science Technology & Research*
Stefano BERRETTI, *University of Firenze*

11:50 ARS-O5.5 – ENCODING AND DECODING LOCAL BINARY PATTERNS FOR HARSH FACE ILLUMINATION NORMALIZATION
Felix JUEFEI-XU, *Carnegie Mellon University*
Marios SAVVIDES, *Carnegie Mellon University*

12:10 ARS-O5.6 – FACE IMAGE ASSESSMENT LEARNED WITH OBJECTIVE AND RELATIVE FACE IMAGE QUALITIES FOR IMPROVED FACE RECOGNITION
Hyung-Il KIM, *Korea Advanced Institute of Science and Technology (KAIST)*
Seung Ho LEE, *Korea Advanced Institute of Science and Technology (KAIST)*
Yong Man RO, *Korea Advanced Institute of Science and Technology (KAIST)*

ARS-P12: Foreground/Background Separation I

Tuesday, 10:30-12:30
POSTER Room: **POSTER A**
Session Chair(s): Anthony VETRO, *Mitsubishi Electric Research Labs (MERL)*

ARS-P12.1 – REFLECTION REMOVAL USING DISPARITY AND GRADIENT-SPARSITY VIA SMOOTHING ALGORITHM
Tharatch SIRINUKULWATTANA, *Korea Advanced Institute of Science and Technology*
Gyeongmin CHOE, *Korea Advanced Institute of Science and Technology*
In So KWEON, *Korea Advanced Institute of Science and Technology*

ARS-P12.2 – MOVING CAMERA HUMAN ACTIVITY LOCALIZATION AND RECOGNITION WITH MOTIONPLANES AND MULTIPLE HOMOGRAPHIES
Konstantinos AVGERINAKIS, *Information and Technologies Institute - Centre for Research and Technology Hellas*
Katerina ADAM, *Information and Technologies Institute - Centre for Research and Technology Hellas*
Alexia BRIASSOULI, *Information and Technologies Institute - Centre for Research and Technology Hellas*
Ioannis KOMPATSIARIS, *Information and Technologies Institute - Centre for Research and Technology Hellas*

ARS-P12.3 – DEPTH-WEIGHTED GROUP-WISE PRINCIPAL COMPONENT ANALYSIS FOR VIDEO FOREGROUND/BACKGROUND SEPARATION
Dong TIAN, *Mitsubishi Electric Research Labs (MERL)*
Hassan MANSOUR, *Mitsubishi Electric Research Labs (MERL)*
Anthony VETRO, *Mitsubishi Electric Research Labs (MERL)*

ARS-P12.4 – MULTIMODAL TOPIC MODELING BASED GEO-ANNOTATION FOR SOCIAL EVENT DETECTION IN LARGE PHOTO COLLECTIONS
Bin XU, *Northeastern University, China*
Guoliang FAN, *Oklahoma State University*

ARS-P12.5 – TOWARDS AUTOMATING VISUAL IN-FIELD MONITORING OF CROP HEALTH
David GIBSON, *University of Bristol*
Tilo BURGHARDT, *University of Bristol*
Neill CAMPBELL, *University of Bristol*
Nishan CANAGARAJAH, *University of Bristol*

ARS-P12.6 – ROBUST AND FAST MOVING OBJECT DETECTION IN A NON-STATIONARY CAMERA VIA FOREGROUND PROBABILITY BASED SAMPLING
Kimin YUN, *Seoul National University*
Jin Young CHOI, *Seoul National University*

ARS-P13: Human Activity Recognition I

Tuesday, 10:30-12:30
POSTER
Room: **POSTER C**

Session Chair(s): Scott T. ACTON, *University of Virginia*

ARS-P13.1 – ACTIVITY RECOGNITION AND DETECTION WITH DISCRIMINATIVE PATCHES
Ziyi LI, *School of Computer and Control Engineering, University of Chinese Academy of Sciences*
Laiyun QING, *School of Computer and Control Engineering, University of Chinese Academy of Sciences*
Jun MIAO, *Institute of Computing Technology, CAS*

ARS-P13.2 – ENHANCED DEFORMABLE PART MODEL FOR PEDESTRIAN DETECTION VIA JOINT STATE INFERENCE
Xiao-Jiao MAO, *Nanjing University*
Jiu-Yang ZHAO, *Nanjing University*
Yu-Bin YANG, *Nanjing University*
Ning LI, *Nanjing University*

ARS-P13.3 – CROWD MOTION MONITORING USING TRACKLET-BASED COMMOTION MEASURE
Hossein MOUSAVI, *Istituto Italiano di Tecnologia*
Moin NABI, *Istituto Italiano di Tecnologia*
Hamed KIANI GALOOGAHI, *Istituto Italiano di Tecnologia*
Alessandro PERINA, *Istituto Italiano di Tecnologia*
Vittorio MURINO, *Istituto Italiano di Tecnologia*

★ **ARS-P13.4 –** UGRASP: A UNIFIED FRAMEWORK FOR ACTIVITY RECOGNITION AND PERSON IDENTIFICATION USING GRAPH SIGNAL PROCESSING
Tamal BATABYAL, *University of Virginia*
Andrea VACCARI, *University of Virginia*
Scott T. ACTON, *University of Virginia*

ARS-P13.5 – TOWARDS PRIVACY-PRESERVING RECOGNITION OF HUMAN ACTIVITIES
Ji DAI, *Boston University*
Behrouz SAGHAFI, *Boston University*
Jonathan WU, *Boston University*
Janusz KONRAD, *Boston University*
Prakash ISHWAR, *Boston University*

ARS-P13.6 – DETECTION OF PEDESTRIAN CROSSING ROAD
Joko HARIYONO, *University of Ulsan*
Kang_Hyun JO, *University of Ulsan*

ARS-P48: Human Activity Recognition II

Tuesday, 10:30-12:30
POSTER
Room: **POSTER D**

Session Chair(s): Scott T. ACTON, *University of Virginia*

ARS-P48.1 – HUMAN ACTION RECOGNITION USING TIME-INVARIANT KEY-TRAJECTORIESDESCRIBING SPATIO-TEMPORAL SALIENT MOTION
Jeong-Jik SEO, *Korea Advanced Institute of Science and Technology (KAIST)*
Wissam J. BADDAR, *Korea Advanced Institute of Science and Technology (KAIST)*
Dae Hoe KIM, *Korea Advanced Institute of Science and Technology (KAIST)*
Yong Man RO, *Korea Advanced Institute of Science and Technology (KAIST)*

ARS-P48.2 – STRUCTURED FEATURE-GRAPH MODEL FOR HUMAN ACTIVITY RECOGNITION
Wanru XU, *Institute of Information Science, Beijing Jiaotong University*
Zhenjiang MIAO, *Institute of Information Science, Beijing Jiaotong University*
Xiao-Ping ZHANG, *Department of Electrical and Computer Engineering, Ryerson University*

ARS-P48.3 – CROWD MODELING USING SOCIAL NETWORKS
Rima CHAKER, *University of Sharjah*
Imran JUNEJO, *University of Sharjah*
Zaher ALAGHBARI, *University of Sharjah*

ARS-P48.4 – TOWARDS DEFINING GROUPS AND CROWDS IN VIDEO USING THE ATOMIC GROUP ACTIONS DATASET
Ricky SETHI, *Fitchburg State University*

ARS-P48.5 – REAL-LIFE VIOLENT SOCIAL INTERACTION DETECTION
Paolo ROTA, *University of Trento*
Nicola CONCI, *University of Trento*
Nicu SEBE, *University of Trento*
James M. REHG, *Georgia Institute of Technology*

ARS-P48.6 – CLASS-SPECIFIC SPARSE CODES FOR REPRESENTING ACTIVITIES
Sabanadesan UMAKANTHAN, *Queensland University of Technology*
Simon DENMAN, *Queensland University of Technology*
Clinton FOOKES, *Queensland University of Technology*
Sridha SRIDHARAN, *Queensland University of Technology*

ARS-P49: Foreground/Background Separation II

Tuesday, 10:30-12:30
POSTER
Room: **POSTER B**

Session Chair(s): Anthony VETRO, *Mitsubishi Electric Research Labs (MERL)*

★ **ARS-P49.1 –** A NOVEL BACKGROUND SUBTRACTION APPROACH BASED ON MULTI LAYERED SELF-ORGANIZING MAPS
Giorgio GEMIGNANI, *Research Team, Hyera Software*
Alessandro ROZZA, *Research Team, Hyera Software*

★ **ARS-P49.2 –** BACKGROUND MODELING IN VIDEOS REVISITED USING FINITE MIXTURES OF GENERALIZED GAUSSIANS AND SPATIAL INFORMATION
Aissa BOULMERKA, *École Nationale Supérieure en Informatique*
Mohand Said ALLILI, *Université du Québec en Outaouais*

ARS-P49.3 – MULTIPLE FEATURES BASED SHARED MODELS FOR BACKGROUND SUBTRACTION
Yingying CHEN, *National Laboratory of Pattern Recognition, Institute of Automation*
Jinqiao WANG, *National Laboratory of Pattern Recognition, Institute of Automation*
Hanqing LU, *National Laboratory of Pattern Recognition, Institute of Automation*

ARS-P49.4 – RECOVERING BACKGROUND REGIONS IN VIDEOS OF CLUTTERED URBAN SCENES
Iain RODGER, *Heriot-Watt University*
Barry CONNOR, *Thales*
Neil ROBERTSON, *Heriot-Watt University*

ARS-P49.5 – BACKGROUND SUBTRACTION FOR STATIC & MOVING CAMERA
Hasan SAJID, *University of Kentucky*
Sen-Ching Samson CHEUNG, *University of Kentucky*

ARS-P49.6 – MULTI-TEMPORAL FOREGROUND DETECTION IN VIDEOS
Mariano TEPPER, *Duke University*
Alasdair NEWSON, *Duke University*
Pablo SPRECHMANN, *Courant Institute, New York University*
Guillermo SAPIRO, *Duke University*

COI-O1: Tomographic Imaging

Tuesday, 10:30-12:30
LECTURE
Room: **204A**
Session Chair(s): Yongyi YANG, *Illinois Institute of Technology*

10:30 COI-O1.1 – REGION BASED 4D TOMOGRAPHIC IMAGE RECONSTRUCTION: APPLICATION TO CARDIAC X-RAY CT
Geert VAN EYNDHOVEN, *Minds-Visionlab, University of Antwerp*
Kees Joost BATENBURG, *Centrum Wiskunde & Informatica, NL-1090 GB Amsterdam, The Netherlands*
Jan SIJBERS, *iMinds-Visionlab, University of Antwerp*

10:50 COI-O1.2 – DETERMINING FLUCTUATION IN BIO-NANOMACHINES FROM ELECTRONMICROSCOPY IMAGES
Yunye GONG, *Cornell University*
Peter DOERSCHUK, *Cornell University*

11:10 ★ COI-O1.3 – JOINT METAL ARTIFACT REDUCTION AND SEGMENTATION OF CT IMAGES USING DICTIONARY-BASED IMAGE PRIOR AND CONTINUOUS-RELAXED POTTS MODEL
Pengchong JIN, *Purdue University*
Dong Hye YE, *Purdue University*
Charles BOUMAN, *Purdue University*

11:30 COI-O1.4 – 4D NON-LOCAL MEANS POST-FILTERING FOR CARDIAC GATED SPECT
Chao SONG, *Illinois Institute of Technology*
Yongyi YANG, *Illinois Institute of Technology*
Wenyuan QI, *Illinois Institute of Technology*
Miles WERNICK, *Illinois Institute of Technology*
Hendrik PRETORIUS, *University of Massachusetts Medical School*
Michael KING, *University of Massachusetts Medical School*

11:50 COI-O1.5 – PET IMAGE RECONSTRUCTION AND DENOISING ON HEXAGONAL LATTICES
Tabish SYED, *IIIT Hyderabad*
Jayanthi SIVASWAMY, *IIIT Hyderabad*

12:10 COI-O1.6 – OPTICAL COHERENCE TOMOGRAPHY IMAGE SEGMENTATION
Jinming DUAN, *University of Nottingham*

COM-P2: Image and Video Coding I

Tuesday, 10:30-12:30
POSTER
Room: **POSTER L**

Session Chair(s): Jana EHMANN, *LG Electronics*

COM-P2.1 – LOW-COMPLEXITY BLOCK SIZE DECISION FOR HEVC INTRA CODING USING BINARYIMAGE FEATURE DESCRIPTORS
Walther GEUDER, *Siemens Corporate Technology*
Peter AMON, *Siemens Corporate Technology*
Eckehard STEINBACH, *Technische Universität München*

COM-P2.2 – A REGULARIZATION APPROACH FOR BAYER RECONSTRUCTION IN LOSSY IMAGE CODING BY INVERSE DEMOSAICING
Masao YAMAGISHI, *Tokyo Institute of Technology*
Seisuke KYOCHI, *The University of Kitakyushu*
Keiichiro SHIRAI, *Shinshu University*
Masahiro OKUDA, *The University of Kitakyushu*

COM-P2.3 – HIGH-THROUGHPUT AND LOW-COMPLEXITY BINARY ARITHMETIC DECODER BASED ON LOGARITHMIC DOMAIN
Quanhe YU, *Tsinghua University*
Xiaozhen ZHENG, *Research Department, HiSilicon Technologies*
Jianhua ZHENG, *Research Department, HiSilicon Technologies*
Yun HE, *Tsinghua University*
Wei YU, *Tsinghua University*
Dadong WANG, *Tsinghua University*
Junyou CHEN, *Tsinghua University*
Yangyang XU, *Tsinghua University*

COM-P2.4 – ROTATE INTRA BLOCK COPY FOR STILL IMAGE CODING
Zhengdong ZHANG, *Massachusetts Institute of Technology*
Vivienne SZE, *Massachusetts Institute of Technology*

COM-P2.5 – DEPENDENT RANDOM ACCESS POINT PICTURES IN HEVC
Martin PETTERSSON, *Ericsson Research*
Rickard SJÖBERG, *Ericsson Research*
Jonatan SAMUELSSON, *Ericsson Research*

COM-P2.6 – RATE-DISTORTION EVALUATION FOR TWO-LAYER CODING SYSTEMS
Philippe HANHART, *EPFL*
Touradj EBRAHIMI, *EPFL*

COM-P8: Image and Video Coding II

Tuesday, 10:30-12:30
POSTER
Room: **POSTER M**

Session Chair(s): Jana EHMANN, *LG Electronics*

COM-P8.1 – SHAPE ENCODING FOR EDGE MAP IMAGE COMPRESSION
Demetrios GEROGIANNIS, *University of Ioannina*
Christophoros NIKOU, *University of Ioannina*
Lisimachos P. KONDI, *University of Ioannina*

★ **COM-P8.2 –** UNIVERSAL LOSSLESS CODING WITH RANDOM USER ACCESS: THE COST OF INTERACTIVITY
Aline ROUMY, *INRIA*
Thomas MAUGEY, *INRIA*

COM-P8.3 – RETINAL-INSPIRED FILTERING FOR DYNAMIC IMAGE CODING
Effrosyni DOUTSI, *UNS, I3S laboratoire, CNRS, 4G-Technology*
Lionel FILLATRE, *UNS, I3S laboratoire, CNRS*
Marc ANTONINI, *UNS, I3S laboratoire, CNRS*
Julien GAULMIN, *4G-Technology*

★ **COM-P8.4 –** A DUAL BLOCK COORDINATE PROXIMAL ALGORITHM WITH APPLICATION TO DECONVOLUTION OF INTERLACED VIDEO SEQUENCES
Feriel ABBOUD, *Universite Paris-Est Marne-la-Vallee, LIGM UMR CNRS 8049*
Emilie CHOUZENOUX, *Universite Paris-Est Marne-la-Vallee, LIGM UMR CNRS 8049*
Jean-Christophe PESQUET, *Universite Paris-Est Marne-la-Vallee, LIGM UMR CNRS 8049*
Jean-Hugues CHENOT, *Institut National de l'Audiovisuel*
Louis LABORELLI, *Institut National de l'Audiovisuel*

COM-P8.5 – LOSSLESS SCREEN CONTENT CODING IN HEVC BASED ON SAMPLE-WISE MEDIAN AND EDGE PREDICTION
Victor SANCHEZ, *University of Warwick*

COM-P3: Image and Video coding III

Tuesday, 10:30-12:30
POSTER
Room: **POSTER N**

Session Chair(s): Jana EHMANN, *LG Electronics*

COM-P3.1 – SPARSE LEAST-SQUARES PREDICTION FOR INTRA IMAGE CODING
Luis LUCAS, *Instituto de Telecomunicações*
Nuno RODRIGUES, *Instituto de Telecomunicações*
Carla PAGLIARI, *Instituto de Telecomunicações*
Eduardo A.B. DA SILVA, *Instituto de Telecomunicações*
Sérgio FARIA, *Instituto de Telecomunicações*

COM-P3.2 – A MULTI-STANDARD INTERPOLATION HARDWARE SOLUTION FOR H.264 AND HEVC
Henrique MAICH, *Federal University of Pelotas*
Guilherme PAIM, *federal University of Pelotas*
Vladimir AFONSO, *federal University of Pelotas*
Luciano AGOSTINI, *federal University of Pelotas*
Bruno ZATT, *federal University of Pelotas*
Marcelo PORTO, *federal University of Pelotas*

COM-P3.3 – CONTRIBUTIONS TO LOSSLESS CODING OF MEDICAL IMAGES USING MINIMUM RATE PREDICTORS
João SANTOS, *Instituto de Telecomunicações*
André GUARDA, *Instituto de Telecomunicações*
Nuno RODRIGUES, *Instituto de Telecomunicações*
Sérgio FARIA, *Instituto de Telecomunicações*

COM-P3.4 – DATA RATE AND DYNAMIC RANGE COMPRESSION OF MEDICAL IMAGES: WHICH ONE GOES FIRST?
Shahrukh ATHAR, *University of Waterloo*
Hojatollah YEGANEH, *University of Waterloo*
Zhou WANG, *University of Waterloo*

COM-P3.5 – FAST CU PARTITION DECISION USING MACHINE LEARNING FOR SCREEN CONTENT COMPRESSION
Yao WANG, *New York University*
Fanyi DUANMU, *New York University*
Zhan MA, *FutureWei Technologies Inc.*

COM-P3.6 – OPTIMAL BIT ALLOCATION IN HEVC FOR REAL-TIME VIDEO COMMUNICATIONS
Miaohui WANG, *Chinese University of Hong Kong*
King Ngi NGAN, *The Chinese University of Hong Kong*

COM-P9: Image and Video coding IV

Tuesday, 10:30-12:30
POSTER
Room: **POSTER 0**

Session Chair(s): Jana EHMANN, *LG Electronics*

COM-P9.1 – VLSI FRIENDLY FAST CU/PU MODE DECISION FOR HEVC INTRA ENCODING:LEVERAGING CONVOLUTION NEURAL NETWORK
Xianyu YU, *Tsinghua University*
Zhenyu LIU, *Tsinghua University*
Junjie LIU, *Tsinghua University*
Yuan GAO, *Tsinghua University*
Dongsheng WANG, *Tsinghua University*

COM-P9.2 – ROI-BASED RATE CONTROL USING TILES FOR AN HEVC ENCODED VIDEO STREAMOVER A LOSSY NETWORK
Marwa MEDDEB, *Telecom ParisTech*
Marco CAGNAZZO, *Telecom ParisTech*
Béatrice PESQUET-POPESCU, *Telecom ParisTech*

COM-P9.3 – 3.975MW 18.396GBPS 2R2W SRAM FOR SBAC CONTEXT MODEL OF HEVC
Longshan DU, *Tsinghua University*
Zhenyu LIU, *Tsinghua University*

COM-P9.4 – SHANNON-KOTELNIKOV MAPPINGS FOR SOFTCAST-BASED JOINT SOURCE-CHANNEL VIDEO CODING
Marco CAGNAZZO, *Institut Mines-Telecom; Telecom-ParisTech; CNRS-LTCI*
Michel KIEFFER, *L2S, CNRS-CentraleSupelec-Univ Paris-Sud*

COM-P9.5 – PIXEL-GRAIN PREDICTION AND K-ORDER UEG-RICE ENTROPY CODING ORIENTED LOSSLESS FRAME MEMORY COMPRESSION FOR MOTION ESTIMATION IN HEVC
Xiaocong LIAN, *School of Electronics and Information, Northwestern Polytechnical University*
Zhenyu LIU, *Research Institute of Information Technology, Tsinghua University*
Wei ZHOU, *School of Electronics and Information, Northwestern Polytechnical University*
Zhemin DUAN, *School of Electronics and Information, Northwestern Polytechnical University*

★ **COM-P9.6 –** SEAMLESS SWITCHING OF H.265/HEVC-CODED DASH REPRESENTATIONS WITH OPEN GOP PREDICTION STRUCTURE
Ye YAN, *University of Science and Technology of China*
Miska Matias HANNUKSELA, *Nokia Technologies*
Houqiang LI, *University of Science and Technology of China*

ELI-O1: 3D Image Processing

Tuesday, 10:30-12:30
LECTURE
Room: **203**
Session Chair(s): Philip A. CHOU, *Microsoft*

10:30 ELI-O1.1 – LARGE-AREA DEPTH RECOVERY FOR RGB-D CAMERA
Zengqiang YAN, *Huazhong University of Science and Technology*
Li YU, *Huazhong University of Science and Technology*
Zixiang XIONG, *Texas A&M University*

10:50 ELI-O1.2 – REFRACTIVE STEREO RAY TRACING FOR RECONSTRUCTING UNDERWATER STRUCTURES
Scott SORENSEN, *University of Delaware*
Abhishek KOLAGUNDA, *University of Delaware*
Philip SAPONARO, *University of Delaware*
Chandra KAMBHAMETTU, *University of Delaware*

11:10 ELI-O1.3 – SIPF: SCALE INVARIANT POINT FEATURE FOR 3D POINT CLOUDS
Baowei LIN, *Dalian Neusoft University of Information*
Fangda ZHAO, *Hiroshima University*
Toru TAMAKI, *Hiroshima University*
Fasheng WANG, *Dalian Neusoft University of Information*
Le XIAO, *Dalian University of Technology*

11:30 ELI-O1.4 – EFFICIENT IMAGE-SPACE EXTRACTION AND REPRESENTATION OF 3D SURFACE TOPOGRAPHY
Matthias ZEPPELZAUER, *St. Poelten University of Applied Sciences*
Markus SEIDL, *St. Poelten University of Applied Sciences*

11:50 ELI-O1.5 – IMPROVING CALIBRATION OF THERMAL STEREO CAMERAS USING HEATED CALIBRATION BOARD
Philip SAPONARO, *University of Delaware*
Scott SORENSEN, *University of Delaware*
Stephen RHEIN, *University of Delaware*
Chandra KAMBHAMETTU, *University of Delaware*

12:10 ELI-O1.6 – COLOR-CODED PATTERN FOR NON METRIC CAMERA CALIBRATION
Lorenzo SORGI, *Technicolor Research & Innovation*
Andrey BUSHNEVSKIY, *Technicolor Research & Innovation*

ELI-P1: 3D Models and Applications

Tuesday, 10:30-12:30
POSTER
Room: **POSTER H**

Session Chair(s): Muhammad ASAD, *City University London*

ELI-P1.1 – ALBEDO ASSISTED HIGH-QUALITY SHAPE RECOVERY FROM 4D LIGHT FIELDS
Fei LIU, *Institute of Automation, Chinese Academy of Sciences*
Guangqi HOU, *Institute of Automation, Chinese Academy of Sciences*
Zhenan SUN, *Institute of Automation, Chinese Academy of Sciences*
Tieniu TAN, *Institute of Automation, Chinese Academy of Sciences*

ELI-P1.2 – INTEL REALSENSE = REAL LOW COST GAZE
Mark DRAELOS, *Duke University*
Qiang QIU, *Duke University*
Alex BRONSTEIN, *Duke University*
Guillermo SAPIRO, *Duke University*

ELI-P1.3 – 3D FACIAL MODEL SYNTHESIS USING COUPLED DICTIONARIES
Swami SANKARANARAYANAN, *University of Maryland*
Vishal PATEL, *University of Maryland*
Rama CHELLAPPA, *University of Maryland*

ELI-P1.4 – GENERATING A 3D HAND MODEL FROM FRONTAL COLOR AND RANGE SCANS
Muhammad ASAD, *City University London*
Enguerrand GENTET, *École Normale Supérieure de Cachan*
Rilwan Remilekun BASARU, *City University London*
Greg SLABAUGH, *City University London*

ELI-P1.5 – LEARNING-BASED DEPTH ESTIMATION FROM 2D IMAGES USING GIST AND SALIENCY
José Luis HERRERA CONEJERO, *Universidad Politécnica de Madrid*
Janusz KONRAD, *Boston University*
Carlos Roberto DEL BLANCO ADÁN, *Universidad Politécnica de Madrid*
Narciso GARCÍA SANTOS, *Universidad Politécnica de Madrid*

ELI-P1.6 – IMPROVED 3D SPARSE MAPS FOR HIGH-PERFORMANCE SFM WITH LOW-COST OMNIDIRECTIONAL ROBOTS
Pedro CAVESTANY, *Cranfield University*
Antonio L. RODRIGUEZ, *Institute Transuranium Elements Joint Research Centre*
Humberto MARTÍNEZ-BARBERÁ, *University of Murcia*
Toby BRECKON, *Durham University*

ELI-P13: Image Processing Systems

Tuesday, 10:30-12:30
POSTER
Room: **POSTER G**

Session Chair(s): James FOWLER, *Mississippi State University*

ELI-P13.1 – FUSION OF MULTISPECTRAL AND PANCHROMATIC IMAGES BASED ON A NOVEL INTER-BAND STRUCTURE MODEL
Shengwei ZHONG, *Dept. of Information Engineering, Harbin Institute of Technology*
Ye ZHANG, *Dept. of Information Engineering, Harbin Institute of Technology*

ELI-P13.2 – EFFECTIVE DOCUMENT IMAGE DEBLURRING VIA GRADIENT HISTOGRAM PRESERVATION
Mingli ZHANG, *École de technologie superieure*
Christian DESROSIERS, *École de technologie superieure*
Caiming ZHANG, *School of Computer Science and Technology*
Mohamed CHERIET, *École de technologie supérieure*

ELI-P13.3 – ITERATIVE ALGORITHMS FOR SPECTRAL ESTIMATION WITH SPATIAL SMOOTHING
Henryk BLASINSKI, *Stanford University*
Joyce FARRELL, *Stanford University*
Brian WANDELL, *Stanford University*

ELI-P13.4 – A NOVEL BINARIZATION APPROACH FOR TEXT IN IMAGES
Ping HU, *School of Computer and Control Engineering, University of Chinese Academy of Sciences*
Ke LU, *School of Computer and Control Engineering, University of Chinese Academy of Sciences*
Weiqiang WANG, *School of Computer and Control Engineering, University of Chinese Academy of Sciences*

★ **ELI-P13.5 –** HYPERSPECTRAL CLASSIFICATION USING A COMPOSITE KERNEL DRIVEN BY NEAREST-NEIGHBOR SPATIAL FEATURES
Vineetha MENON, *Mississippi State University*
Saurabh PRASAD, *University of Houston*
James FOWLER, *Mississippi State University*

ELI-P13.6 – PERCEPTUAL BACKLIGHT SCALING FOR LOW POWER LIQUID CRYSTAL DISPLAYS BASED ON VISUAL SALIENCY
Cheolkon JUNG, *Xidian University*
Zengtao XIA, *Xidian University*

GOYT-W: Industry Workshop: Imaging DSP at Google/YouTube

Tuesday, 10:30-12:30
Room: **206A**

WORKSHOP
Session Chair(s): André MORIN, *Optelis*
Jean-Luc DUGELAY, *Eurecom*

Summary
While well known for search, Google has now grown to generate significant impact in the media-processing space. Recruitment in media/imaging and vision has been growing for some time. This workshop features three Googlers, Peyman Milamfar, Anil Kokaram and Debargha Mukerjee, with 20-min snapshots of Imaging and Video DSP technology currently being explored by Google/YouTube. We highlight key developments and expose some of the underbelly of technology research and development in YouTube, Chrome, and Google Research itself.

Presenters
Debargha Mukherjee, *Open-source video-codec development at Google*
Anil Kokaram, *Technical Lead in the Transcoding Group at YouTube/Google*
Peyman Milanfar, *Lead, Computational Imaging team in Google Research*

NEW-P1: Stereoscopic, Multiview and 3-D Coding

Tuesday, 10:30-12:30
POSTER
Room: **POSTER J**

Session Chair(s): Pascal FROSSARD, *EPFL*

★ **NEW-P1.1 –** ON THE ACCURACY OF POINT LOCALISATION IN A CIRCULAR CAMERA-ARRAY
Alireza GHASEMI, *EPFL*
Adam SCHOLEFIELD, *EPFL*
Martin VETTERLI, *EPFL*

NEW-P1.2 – LOW COMPLEXITY UNSUPERVISED MULTI-CAMERA COLOR CALIBRATION WITHAPPLICATION TO PANORAMIC VIDEO CAPTURING
Karim HELWANI, *Huawei European Research Center*
Lukasz KONDRAD, *Huawei European Research Center, Munich*
Nicola PIOTTO, *Huawei European Research Center, Munich*

NEW-P1.3 – SUPER-RESOLUTION IMAGE SYNTHESIS USING THE PHYSICAL PIXEL ARRANGEMENT OF A LIGHT FIELD CAMERA
Kazuki OHASHI, *Nagoya Univeresity*
Keita TAKAHASHI, *Nagoya Univeresity*
Mehrdad PANAHPOUR TEHERANI, *Nagoya Univeresity*
Toshiaki FUJII, *Nagoya Univeresity*

NEW-P1.4 – RANK ANALYSIS OF A LIGHT FIELD FOR DUAL-LAYER 3D DISPLAYS
Keita TAKAHASHI, *Nagoya University*
Toyohiro SAITO, *Nagoya University*
Mehrdad PANAHPOUR TEHRANI, *Nagoya University*
Toshiaki FUJII, *Nagoya University*

NEW-P1.5 – CDF 9/7 WAVELETS AS SPARSIFYING OPERATOR IN COMPRESSIVE HOLOGRAPHY
Hao YAN, *Vrije Universiteit Brussel, Dept. of Electronics and Informatics (ETRO)*
David BLINDER, *Vrije Universiteit Brussel, Dept. of Electronics and Informatics (ETRO), Belgium;*
Stijn BETTENS, *Vrije Universiteit Brussel, Dept. of Electronics and Informatics (ETRO)*
Heidi OTTEVAERE, *Vrije Universiteit Brussel, Brussels Photonics Team (B-PHOT)*
Adrian MUNTEANU, *Vrije Universiteit Brussel, Dept. of Electronics and Informatics (ETRO)*
Peter SCHELKENS, *Vrije Universiteit Brussel, Dept. of Electronics and Informatics (ETRO)*

NEW-P2: Multidimensional Processing

Tuesday, 10:30-12:30
POSTER
Room: **POSTER K**

Session Chair(s): Michael HOEDLMOSER, *Siemens AG*

NEW-P2.1 – ANGLE CONSTRAINED PATH FOR CLUSTERING OF MULTIPLE MANIFOLDS
Amir BABAEIAN, *UC San Diego*
Alireza BAYESTEHTASHK, *Oregon Health & Science University*
Mohammadreza BABAEE, *Technische Universitat Munchen*
Mojtaba BANDARABADI, *University of Coimbra*
Antonio DOURADO, *University of Coimbra*
Amin GHADESI, *University of Mazandaran*

NEW-P2.2 – SYNTHESIS OF LIGHT-FIELD RAW DATA FROM RGB-D IMAGES
Chao SUN, *University of Electronic Science and Technology of China*
Yiqun WU, *Hongkong University of Science and Technology*
Bing ZENG, *University of Electronic Science and Technology of China*

NEW-P2.3 – COMPLEX MODULATION COMPUTER-GENERATED HOLOGRAM BY A FAST HYBRID POINT-SOURCE/WAVE-FIELD APPROACH
Antonin GILLES, *Institut de Recherche Technologique b<>com*
Patrick GIOIA, *Institut de Recherche Technologique b<>com*
Rémi COZOT, *Institut de Recherche Technologique b<>com*
Luce MORIN, *Institut de Recherche Technologique b<>com*

NEW-P2.4 – A FRAMEWORK FOR VIEW-DEPENDENT HOLOGRAM REPRESENTATION AND ADAPTIVE RECONSTRUCTION
Kartik VISWANATHAN, *Orange Labs*
Patrick GIOIA, *Orange Labs*
Luce MORIN, *INSA/IETR*

NEW-P2.5 – 3D WINDOW LOCALIZATION ON BUILDING FACADES FROM AERIAL IMAGES
Michael HOEDLMOSER, *Siemens AG Austria*

NEW-P2.6 – BUILDING CHANGE DETECTION BASED ON 3D RECONSTRUCTION
Baohua CHEN, *Department of Automation, Tsinghua University*
Yueqi DUAN, *Department of Automation, Tsinghua University*
Siyuan HUANG, *Department of Automation, Tsinghua University*
Jie ZHOU, *Department of Automation, Tsinghua University*
Lei DENG, *Department of Automation, Tsinghua University*

SMR-O2: Image Segmentation and Classification

Tuesday, 10:30-12:30
LECTURE
Room: **205A**
Session Chair(s): Mireille BOUTIN, *Purdue University*

10:30 SMR-O2.1 – MULTI-KERNEL COLLABORATIVE REPRESENTATION FOR IMAGE CLASSIFICATION
Weiyang LIU, *School of Electronic and Computer Engineering, Peking University*
Zhiding YU, *Department of Electrical & Computer Engineering, Carnegie Mellon University*
Yandong WEN, *School of Electronic & Information Engineering, South China University of Technology*
Meng YANG, *College of Computer Science & Software Engineering, Shenzhen University*
Yuexian ZOU, *School of Electronic & Computer Engineering, Peking University*

10:50 SMR-O2.2 – THE HIDDEN STRUCTURE OF IMAGE DATASETS
Sangchun HAN, *Purdue University*
Mireille BOUTIN, *Purdue University*

11:10 SMR-O2.3 – WITHIN-CLASS PENALTY BASED MULTI-CLASS SUPPORT VECTOR MACHINE
Xiaoshuang SHI, *Graduate School at Shenzhen, Tsinghua University*
Zhenhua GUO, *Graduate School at Shenzhen, Tsinghua University*
Yujiu YANG, *Graduate School at Shenzhen, Tsinghua University*
Lin YANG, *Department of Biomedical Engineering, University of Florida*

11:30 ★ SMR-O2.4 – PARTIALLY TAGGED IMAGE CLUSTERING
Qiyue YIN, *Institute of Automation, Chinese Academy of Sciences*
Shu WU, *Institute of Automation, Chinese Academy of Sciences*
Liang WANG, *Institute of Automation, Chinese Academy of Sciences*

11:50 SMR-O2.5 – TOWARDS REDUCTION OF THE TRAINING AND SEARCH RUNNING TIME COMPLEXITIES FOR NON-RIGID OBJECT SEGMENTATION
Jacinto NASCIMENTO, *ISR-IST, Portugal*
Gustavo CARNEIRO, *ISR-IST, Portugal*

12:10 SMR-O2.6 – A SPLITTING-AND-GROUPING BASED MULTI-MODEL FITTING FOR COMPUTER VISION
Yun ZHANG, *State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing*
Bin LUO, *State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing*

SNT-S4: Show & Tell IV

Tuesday, 10:30-12:30
Room: **SHOW & TELL**

SHOW & TELL
Session Chair(s): Fabrice LABEAU, *McGill University*

SNT-S4.1 – PRACTICAL OPTIMIZATION ALGORITHMS FOR IMAGE PROCESSING
Rahul MOURYA, *Université Jean Monnet*
We propose to demonstrate the usability and efficiency of novel optimization algorithms,ror selected problems in image processing such as Poissonian Image Deblurring, Shift-Variant Image Deblurring, and Image Segmentation with Mumford-Shah Model. Through a MTALB GUI, users can see in real-time how the different algorithms behave for the different problems and see the evolving solution of the optimization problems, and final solution in less than half a minute.

SNT-S4.2 – APPLYING IMAGE ANALYSIS TO ASSESS FOOD AESTHETICS AND UNIQUENESS
Ying LI, *IBM T. J. Watson Research Center*
This demo is about assessing the aesthetics of a cooked dish by analyzing its color composition. Especially, it detects major colors in the food image, explores their compliance to certain color schemes, measures how they spread across the color wheel, estimate their intensity and brightness, and finally assess how visually appealing the image is.

SNT-S4.3 – EFFICIENT REGRESSION PRIORS FOR REDUCING IMAGE COMPRESSION ARTIFACTS
Rasmus ROTHE, *Computer Vision Lab, D-ITET, ETH Zurich*
Radu TIMOFTE, *Computer Vision Lab, D-ITET, ETH Zurich*
Luc VAN GOOL, *Computer Vision Lab, D-ITET, ETH Zurich*
We propose an efficient novel compression artifact reduction algorithm based on the adjusted anchored neighborhood regression, a method from image super-resolution literature. We double the relative gains in PSNR when compared with the state-of-the-art methods such as SLGP, while being order(s) of magnitude faster.

SNT-S4.4 – UTILIZING IMAGE-BASED FEATURES IN BIOMEDICAL DOCUMENT CLASSIFICATION
Kaidi MA, *University of Delaware*
Hogyeong JEONG, *University of Delaware*
Gowri SOMANATH, *University of Delaware*
Ryan TARPINE, *Google*
Kyle SCHUTTER, *Brown University*
Dorothea BLOSTEIN, *Queen's Univeristy*
Sorin ISTRAIL, *Univeristy of Delaware*
Chandra KAMBHAMETTU, *University of Delaware*
Hagit SHATKAY, *University of Delaware and Queen's University*
In the demonstration we will show how our system utilizes both OCR-based image features and text-based features to successfully identify articles that pertain to cis-regulatory modules in the context of gene-networks. We will start by showing how we represent biomedical articles. Namely, we use two types of representation: image-based and text-based

SS7-O1: Computational Imaging

Tuesday, 10:30-12:30
LECTURE
Room: **202**

Session Chair(s): Clem KARL, *Boston University*
Charles BOUMAN, *Purdue University*
Thrasyvoulos N. PAPPAS, *Northwestern University*

10:30 SS7-O1.1 – COMPUTATIONAL LIGHTING DESIGN
Sylvain PARIS, *Adobe Research*

10:50 ★ SS7-O1.2 – MODEL-BASED IMAGE RECONSTRUCTION OF CHEMILUMINESCENCEUSING A PLENOPTIC 2.0 CAMERA
Hung NIEN, *University of Michigan*
Jeffrey FESSLER, *University of Michigan*
Volker SICK, *University of Michigan*

11:10 ★ SS7-O1.3 – 3-D IMAGE RECONSTRUCTION FOR BIO NANOMACHINES WITH HELICAL SYMMETRY: IMAGE FORMATION THEORY
Qiu WANG, *Cornell University*
Peter DOERSCHUK, *Cornell University*

11:30 SS7-O1.4 – SAMPLING OPTIMIZATION FOR ON-CHIP COMPRESSIVE VIDEO
Leonidas SPINOULAS, *Northwestern University*
Oliver COSSAIRT, *Northwestern University*
Aggelos K. KATSAGGELOS, *Northwestern University*

11:50 SS7-O1.5 – MODEL-BASED ITERATIVE RECONSTRUCTION FOR MAGNETIC RESONANCE FINGERPRINTING
Bo ZHAO, *University of Illinois at Urbana-Champaign*

12:10 ★ SS7-O1.6 – AN AUGMENTED LAGRANGIAN METHOD FOR IMAGE RECONSTRUCTION WITH MULTIPLE FEATURES
H. Emre GUVEN, *ASELSAN INC, Ankara, TURKEY*
Alper GUNGOR, *ASELSAN Inc.*
Mujdat ÇETIN, *SABANCI UNIVERSITY ISTANBUL*

TEC-O3: Image Enhancement, Deblurring and Denoising

Tuesday, 10:30-12:30

LECTURE

Room: **204B**

Session Chair(s): Alin ACHIM, *University of Bristol*

10:30 **TEC-O3.1 –** IMAGE DEBLURRING USING ROBUST SPARSITY PRIORS
Xinxin ZHANG, *Peking University Shenzhen Graduate School*
Ronggang WANG, *Peking University Shenzhen Graduate School*
Yonghong TIAN, *Peking University*
Wenmin WANG, *Peking University Shenzhen Graduate School*
Wen GAO, *Peking University*

10:50 **TEC-O3.2 –** REFERENCE IMAGE BASED METHOD OF REGION OF INTEREST ENHANCEMENT FOR HAZE IMAGE
Wuzhen SHI, *Harbin Institute of Technology*
Xinwei GAO, *Harbin Institute of Technology*
Boqi CHEN, *Harbin Institute of Technology*
Feng JIANG, *Harbin Institute of Technology*
Debin ZHAO, *Harbin Institute of Technology*

11:10 **TEC-O3.3 –** BLIND IMAGE DECONVOLUTION USING THE SYLVESTER MATRIX
Nora ALKHALDI, *The university of Sheffield*
Joab WINKLER, *The university of Sheffield*

11:30 **TEC-O3.4 –** GROUP-BASED HYPERSPECTRAL IMAGE DENOISING USING LOW RANK REPRESENTATION
Mengdi WANG, *Tsinghua University*
Jing YU, *Beijing University of Technology*
Weidong SUN, *Tsinghua University*

11:50 **TEC-O3.5 –** IMAGE DENOISING VIA CODED APERTURE PHOTOGRAPHY
Minhaeng LEE, *KAIST*
Yu-Wing TAI, *KAIST*

12:10 **TEC-O3.6 –** A LOW-LIGHT IMAGE ENHANCEMENT METHOD FOR BOTH DENOISING AND CONTRAST ENLARGING
Lin LI, *Peking University Shenzhen Graduate School*
Ronggang WANG, *Peking University Shenzhen Graduate School*
Wenmin WANG, *Peking University Shenzhen Graduate School*
Wen GAO, *Peking University Shenzhen Graduate School*

TEC-P1: Automated Detection and Tracking in Biomedical Images I

Tuesday, 10:30-12:30

POSTER

Room: **POSTER F**

Session Chair(s): A. Enis ÇETIN, *Bilkent University*
Oguzhan OGUZ, *Bilkent University*

TEC-P1.1 – QUANTIFICATION OF THE 3D COLLAGEN NETWORK GEOMETRY IN CONFOCAL REFLECTION MICROSCOPY
Martin MASKA, *Masaryk University*
Cristina EDERRA, *Center for Applied Medical Research, University of Navarra*
Javier FERNÁNDEZ-MARQUÉS, *Center for Applied Medical Research, University of Navarra*
Arrate MUÑOZ-BARRUTIA, *Center for Applied Medical Research, University of Navarra*
Michal KOZUBEK, *Masaryk University*
Carlos ORTIZ-DE-SOLÓRZANO, *Center for Applied Medical Research, University of Navarra*

TEC-P1.2 – MULTI-RESOLUTION SUPER-PIXELS AND THEIR APPLICATIONS ON FLUORESCENTMESENCHYMAL STEM CELLS IMAGES
Onur YORULMAZ, *Bilkent Univesity,Department of Electrical and Electronics Engineering*
Oguzhan OGUZ, *Bilkent Univesity,Department of Electrical and Electronics Engineering*
Ece AKHAN, *Bilkent Univesity,Department of Molecular Biology and Genetics*
Dönüs TUNCEL, *Bilkent Univesity,Department of Chemistry*
Rengül Ç. ATALAY, *Cancer Systems Biology Laboratory, Graduate School of Informatics, Middle East Technical University*
A. Enis ÇETIN, *Bilkent Univesity,Department of Electrical and Electronics Engineering*

TEC-P1.3 – A SENSITIVE AND EFFICIENT METHOD FOR MEASURING CHANGE IN CORTICALTHICKNESS USING FUZZY CORRESPONDENCE IN ALZHEIMER'S DISEASE
Saurabh GARG, *University of British Columbia*
Lisa TANG, *University of British Columbia*
Anthony TRABOULSEE, *University of British Columbia*
Roger TAM, *University of British Columbia*

TEC-P1.4 – SIMULTANEOUS MOTION CORRECTION AND T1 ESTIMATION IN QUANTITATIVE T1 MAPPING: AN ML RESTORATION APPROACH
Gabriel RAMOS-LLORDÉN, *iMinds-Vision Lab, University of Antwerp*
Arnold Jan DEN DEKKER, *iMinds-Vision Lab, University of Antwerp*
Gwendolyn VAN STEENKISTE, *iMinds-Vision Lab, University of Antwerp*
Johan VAN AUDEKERKE, *Bio-imaging Lab, University of Antwerp*
Marleen VERHOYE, *Bio-imaging Lab, University of Antwerp*
Jan SIJBERS, *iMinds-Vision Lab, University of Antwerp*

TEC-P1.5 – AN AUTOMATIC MUSCLE FIBER ORIENTATION TRACKING ALGORITHM USING BAYESIAN KALMAN FILTER FOR ULTRASOUND IMAGES
Shuai ZHANG, *The University of Hong Kong*
Zhiguo ZHANG, *The University of Hong Kong*
Shingchow CHAN, *The University of Hong Kong*
Huiying WEN, *School of Medicine, Shenzhen Key Laboratory of Biomedical Engineering, Shenzhen University*
Xin CHEN, *School of Medicine, Shenzhen Key Laboratory of Biomedical Engineering, Shenzhen University*

TEC-P1.6 – AUTOMATIC DETECTION OF BONE MARROW INFILTRATION BY MULTIPLE MYELOMA DETECTION IN LOW-DOSE CT
Francisco MARTÍNEZ-MARTÍNEZ, *Czech Technical University in Prague*
Jan KYBIC, *Czech Technical University in Prague*
Lukás LAMBERT, *Charles University in Prague, First Faculty of Medicine, Department of Radiology*

TEC-P31: Automated Detection and tracking in Biomedical Images II

Tuesday, 10:30-12:30
POSTER Room: **POSTER E**

Session Chair(s): A. Enis ÇETIN, *Bilkent University*
Oguzhan OGUZ, *Bilkent University*

TEC-P31.1 – USING STEERABLE WAVELETS AND MINIMAL PATHS TO RECONSTRUCT AUTOMATICALLY FILAMENTS IN FLUORESCENCE IMAGING
Thibault LAGACHE, *Institut Pasteur*
Quentin MARCOU, *Institut Pasteur*
Antoine BARDONNET, *Institut Pasteur*
Brice ROTUREAU, *Institut Pasteur*
Philippe BASTIN, *Institut Pasteur*
Jean-Christophe OLIVO-MARIN, *Institut Pasteur*

TEC-P31.2 – HIERARCHICAL TUCKER TENSOR REGRESSION: APPLICATION TO BRAIN IMAGING DATA ANALYSIS
Ming HOU, *Laval university*
Brahim CHAIB-DRAA, *Laval university*

★ **TEC-P31.3 –** DIAGNOSTIC COLOR ESTIMATION OF TISSUE COMPONENTS IN PATHOLOGY IMAGESVIA VON MISES MIXTURE MODEL
Xingyu LI, *University of Toronto*
Konstantinos N. PLATANIOTIS, *University of Toronto*

TEC-P31.4 – DENSE FEMUR RECONSTRUCTION FROM TWO X-RAY IMAGES USING GENERIC 3D MODEL WITH TWIST CORRECTION
Ki-Jung KIM, *Kyung Hee University*
Seungkyu LEE, *Kyung Hee University*
Yoon Hyuk KIM, *Kyung Hee University*

TEC-P31.5 – A MULTI-FRAME OPTICAL FLOW SPOT TRACKER
Jizhou LI, *The Chinese University of Hong Kong*
Christopher GILLIAM, *The Chinese University of Hong Kong*
Thierry BLU, *The Chinese University of Hong Kong*

TEC-P31.6 – RECOVERING SIZE AND SHAPE OF POLYP FROM ENDOSCOPE IMAGE BY RBF-NN MODIFICATION
Yuji IWAHORI, *Chubu University*
Seiya TSUDA, *Chubu University*
Yuki HANAI, *Chubu University*
Robert J. WOODHAM, *University of British Columbia*
M. K. BHUYAN, *Indian Inst. of Tech. Guwahati*
Kunio KASUGAI, *Aichi Medical University*

SGT-L: Get-Together Students-Employers Luncheon

Tuesday, 12:30-14:00
LUNCH
Room: **206B**

Session Chair(s): Sylvie DANIEL, *Laval University*
Guoliang FAN, *Oklahoma State University*
Patrizio CAMPISI, *Università Degli Studi Roma Tre*

ARS-O21: Learning II

Tuesday, 14:00-16:00
LECTURE
Room: **205C**

Session Chair(s): Markus FLIERL, *KTH Royal Institute of Technology*

14:00 **ARS-O21.1 –** SEMI-SUPERVISED LEARNING FOR FINE-GRAINED OBJECT RECOGNITION
Simone PALAZZO, *University of Catania*
Concetto SPAMPINATO, *University of Catania*
Daniela GIORDANO, *University of Catania*

14:20 **ARS-O21.2 –** MAY THE TORCHER LIGHT OUR WAY: A NEGATIVE-ACCELERATED ACTIVE LEARNING FRAMEWORK FOR IMAGE CLASSIFICATION
Zhipeng YE, *Harbin Institute of Technology*
Peng LIU, *Harbin Institute of Technology*
Xianglong TANG, *Harbin Institute of Technology*
Wei ZHAO, *Harbin Institute of Technology*

14:40 **ARS-O21.3 –** GEOMETRY-BASED RANKING FOR MOBILE 3D VISUAL SEARCH USING HIERARCHICALLY STRUCTURED MULTI-VIEW FEATURES
David MARS, *kth-Royal Institute of Technology*
Hanwei WU, *kth-Royal Institute of Technology*
Haopeng LI, *kth-Royal Institute of Technology*
Markus FLIERL, *kth-Royal Institute of Technology*

15:00 **ARS-O21.4 –** MULTI-LABEL ACTIVE LEARNING WITH LABEL CORRELATION FOR IMAGE CLASSIFICATION
Chen YE, *Soochow University*
Jian WU, *Soochow University*
Victor S. SHENG, *University of Central Arkansas*
Pengpeng ZHAO, *Soochow University*
Zhiming CUI, *Soochow University*

15:20 **ARS-O21.5 –** CENTER-BASED WEIGHTED KERNEL LINEAR REGRESSION FOR IMAGE CLASSIFICATION
Qingxiang FENG, *Tsinghua University*
Chun YUAN, *Tsinghua University*
Jiawen HUANG, *Tsinghua University*
Weifeng LI, *Tsinghua University*

15:40 **ARS-O21.6 –** THE USE OF DEEP LEARNING FEATURES IN A HIERARCHICAL CLASSIFIER LEARNED WITH THE MINIMIZATION OF A NON-GREEDY LOSS FUNCTION
Zhibin LIAO, *Australian Centre for Visual Technologies, The University of Adelaide*
Gustavo CARNEIRO, *Australian Centre for Visual Technologies, The University of Adelaide*

ARS-O6: Face Recognition II

Tuesday, 14:00-16:00
LECTURE
Room: **205A**
Session Chair(s): Zheng-Hua TAN, *Aalborg University*

14:00 **ARS-O6.1 –** ROBUST POSE NORMALIZATION FOR FACE RECOGNITION UNDER VARYING VIEWS
Biao WANG, *Samsung R&D Institute, China*
Xuetao FENG, *Samsung R&D Institute, China*
Lujin GONG, *Samsung R&D Institute, China*
Hao FENG, *Samsung R&D Institute, China*
Wonjun HWANG, *Samsung Advanced Institute of Technology*
Jae-joon HAN, *Samsung Advanced Institute of Technology*

14:20 **ARS-O6.2 –** GRAPH REGULARIZED DISCRIMINANT ANALYSIS AND ITS APPLICATION TO FACE RECOGNITION
Tianfei ZHOU, *Beijing Institute of Technology*
Yao LU, *Beijing Institute of Technology*
Yanan ZHANG, *Beijing Institute of Technology*

14:40 **ARS-O6.3 –** LOCAL FEATURE LEARNING FOR FACE RECOGNITION UNDER VARYING POSES
Xiaodong DUAN, *Aalborg University*
Zheng-Hua TAN, *Aalborg University*

15:00 **ARS-O6.4 –** A GEOMETRICAL-MODEL-BASED FACE RECOGNITION
Yea-Shuan HUANG, *Chung-Hua University*
Suen-Yu CHEN, *Chung-Hua University*

15:20 **ARS-O6.5 –** A 3D FACE RECOGNITION METHOD USING REGION-BASED EXTENDED LOCAL BINARY PATTERN
Shiwen LV, *School of Automation, Southeast University, Nanjing 210096, China*
Feipeng DA, *School of Automation, Southeast University, Nanjing 210096, China*
Xing DENG, *School of Automation, Southeast University*

15:40 **ARS-O6.6 –** WEIGHTED SPARSE REPRESENTATION USING A LEARNED DISTANCE METRIC FOR FACE RECOGNITION
Xiaochao QU, *Korea University*
Suah KIM, *Korea University*
Dessalegn ATNAFU, *Korea University*
Hyoung Joong KIM, *Korea University*

ARS-O7: Image Retrieval

Tuesday, 14:00-16:00
LECTURE
Room: **204A**
Session Chair(s): Kiyo AIZAWA, *University of Tokyo*

14:00 **ARS-O7.1 –** LOAD-BALANCED LOCALITY-SENSITIVE HASHING: A NEW METHOD FOR EFFICIENT NEAR DUPLICATE IMAGE DETECTION
Yabo FAN, *National Laboratory of Pattern Recognition, Institute of Automation*
Junliang XING, *National Laboratory of Pattern Recognition, Institute of Automation*
Weiming HU, *National Laboratory of Pattern Recognition, Institute of Automation*

14:20 **ARS-O7.2 –** RETRIEVING IMAGES COMBINING SALIENCY DETECTION WITH IRM
Shao HUANG, *University of Chinese Academy of Sciences*
Weiqiang WANG, *University of Chinese Academy of Sciences*

14:40 **ARS-O7.3 –** ARTRIEVAL: PAINTING RETRIEVAL WITHOUT EXPERT KNOWLEDGE
Namil KIM, *KAIST*
Yukyung CHOI, *KAIST*
Soonmin HWANG, *KAIST*
In So KWEON, *KAIST*

15:00 **ARS-O7.4 –** PRODUCT TREE QUANTIZATION FOR APPROXIMATE NEAREST NEIGHBOR SEARCH
Jiangbo YUAN, *Florida State University*
Xiuwen LIU, *Florida State University*

15:20 **ARS-O7.5 –** SEARCHING FOR NEAREST NEIGHBORS WITH A DENSE SPACE PARTITIONING
Tuan NGUYEN, *The University of Tokyo*
Yusuke MATSUI, *The University of Tokyo*
Toshihiko YAMASAKI, *The University of Tokyo*
Kiyoharu AIZAWA, *The University of Tokyo*

15:40 **ARS-O7.6 –** RST-INVARIANT SKETCH RETRIEVAL BASED ON CIRCULAR DESCRIPTION
Hanguang ZHAO, *Dalian University of Technology*
Xiangwei KONG, *Dalian University of Technology*
Haiyan FU, *Dalian University of Technology*
Yujia ZHANG, *Fordham University*

ARS-P14: Human Body Analysis and Tracking

Tuesday, 14:00-16:00
POSTER
Room: **POSTER A**

Session Chair(s): Stefan WINKLER, *Advanced Digital Sciences Center, University of Illinois at Urbana-Champaign*

ARS-P14.1 – HUMAN POSE ESTIMATION WITH GLOBAL MOTION CUES
Qingxuan SHI, *Beijing Institute of Technology*
Huijun DI, *Beijing Institute of Technology*
Yao LU, *Beijing Institute of Technology*
Feng LV, *Beijing Institute of Technology*

ARS-P14.2 – CONTEXT AWARE MODEL FOR ARTICULATED HUMAN POSE ESTIMATION
Lianrui FU, *Institute of Automation, Chinese Academy of Sciences*
Junge ZHANG, *Institute of Automation, Chinese Academy of Sciences*
Kaiqi HUANG, *Institute of Automation, Chinese Academy of Sciences*

ARS-P14.3 – COMPUTATIONALLY EFFICIENT HUMAN POSE ESTIMATION WITH MULTI SOFTMAX DEEP CONVOLUTIONAL NEURAL NETWORK
Yunhun JANG, *Korea Advanced Institute of Science and Technology (KAIST)*
Dae-Shik KIM, *Korea Advanced Institute of Science and Technology (KAIST)*

ARS-P14.4 – IMPROVING BOOSTED PEDESTRIAN DETECTOR IN A SURVEILLANCE VIDEO
Puhao MA, *Tsinghua University*
Haizhou AI, *Tsinghua University*
Shun SAKAI, *OMRON Corporation*

ARS-P14.5 – HAND GESTURE RECOGNITION AND SPOTTING IN UNCONTROLLED ENVIRONMENTS BASED ON CLASSIFIER WEIGHTING
Yi YAO, *University of Warwick*
Chang-Tsun LI, *University of Warwick*

ARS-P14.6 – REAL-TIME HUMAN BODY PARTS LOCALIZATION FROM DYNAMIC VISION SENSOR
Wentao MAO, *Samsung Advanced Institute of Technology (China Lab)*
Qiang WANG, *Samsung Advanced Institute of Technology (China Lab)*
Xiaotao WANG, *Samsung Advanced Institute of Technology (China Lab)*

ARS-P17: Image Segmentation I

Tuesday, 14:00-16:00
POSTER
Room: **POSTER D**

Session Chair(s): Lionel LACASSAGNE, *University Paris-Sud*

ARS-P17.1 – INTERACTIVE OBJECT SEGMENTATION USING SINGLE TOUCH
Viswanath GOPALAKRISHNAN, *Samsung R&D Institute - India, Bangalore*
Anirudh PURWAR, *Samsung R&D Institute - India, Bangalore*
Satish LOKKOJU, *Samsung R&D Institute - India, Bangalore*
Raushan KUMAR, *Samsung R&D Institute - India, Bangalore*
Kiran NANJUNDA IYER, *Samsung R&D Institute - India, Bangalore*

★ **ARS-P17.2 –** MATERIAL CLASSIFICATION AND SEMANTIC SEGMENTATION OF RAILWAY TRACK IMAGES WITH DEEP CONVOLUTIONAL NEURAL NETWORKS
Xavier GIBERT, *University of Maryland*
Vishal PATEL, *University of Maryland*
Rama CHELLAPPA, *University of Maryland*

ARS-P17.3 – PARALLEL LIGHT SPEED LABELING: AN EFFICIENT CONNECTED COMPONENT LABELING ALGORITHM FOR MULTI-CORE PROCESSORS
Laurent CABARET, *Laboratoire de Recherche en Informatique / INRIA - Univ. Paris Sud*
Lionel LACASSAGNE, *Laboratoire de Recherche en Informatique / INRIA - Univ. Paris Sud*
Daniel ETIEMBLE, *Laboratoire de Recherche en Informatique / INRIA - Univ. Paris Sud*

★ **ARS-P17.4 –** ROAD EXTRACTION VIA ADAPTIVE GRAPH CUTS WITH MULTIPLE FEATURES
Guangliang CHENG, *National laboratory of pattern recognition, Institute of Automation Chinese Academy of Sciences*
Ying WANG, *National laboratory of pattern recognition, Institute of Automation Chinese Academy of Sciences*
Feiyun ZHU, *National laboratory of pattern recognition, Institute of Automation Chinese Academy of Sciences*
Chunhong PAN, *National laboratory of pattern recognition, Institute of Automation Chinese Academy of Sciences*

ARS-P17.5 – FINE-STRUCTURED OBJECT SEGMENTATION VIA LOCAL AND NONLOCAL NEIGHBORHOOD PROPAGATION
Yongchao GONG, *Institute of Automation, Chinese Academy of Sciences*
Shiming XIANG, *Institute of Automation, Chinese Academy of Sciences*
Lingfeng WANG, *Institute of Automation, Chinese Academy of Sciences*
Chunhong PAN, *Institute of Automation, Chinese Academy of Sciences*

ARS-P19: Local Features

Tuesday, 14:00-16:00
POSTER
Room: **POSTER B**

Session Chair(s): Frédéric DUFAUX, *Télécom ParisTech*

ARS-P19.1 – PLANT IDENTIFICATION USING TRIANGULAR REPRESENTATION BASED ON SALIENT POINTS AND MARGIN POINTS
Zhong-Qiu ZHAO, *Hefei University of Technology*
Yan HONG, *Hefei University of Technology*
Peng ZHENG, *Hefei University of Technology*

ARS-P19.2 – HISTOGRAMS OF LOCALLY AGGREGATED ORIENTED GRADIENTS
Xiusheng LU, *Harbin Institute of Technology*
Shengping ZHANG, *Harbin Institute of Technology*
Hongxun YAO, *Harbin Institute of Technology*
Xin SUN, *Harbin Institute of Technology*
Yanhao ZHANG, *Harbin Institute of Technology*

ARS-P19.3 – TIGER: A TEXTURE-ILLUMINATION GUIDED ENERGY RESPONSE MODEL FOR ILLUMINATION ROBUST LOCAL SALIENCY
Brendan CHWYL, *University of Waterloo*
Audrey CHUNG, *University of Waterloo*
Francis LI, *University of Waterloo*
Alexander WONG, *University of Waterloo*
David CLAUSI, *University of Waterloo*

ARS-P19.4 – IMPROVING DISTINCTIVENESS OF BRISK FEATURES USING DEPTH MAPS
Maxim KARPUSHIN, *Télécom ParisTech*
Giuseppe VALENZISE, *Télécom ParisTech*
Frédéric DUFAUX, *Télécom ParisTech*

ARS-P19.5 – FAST-MATCH: FAST AND ROBUST FEATURE MATCHING ON LARGE IMAGES
Jonas ARNFRED, *University of Illinois at Urbana-Champaign*
Stefan WINKLER, *University of Illinois at Urbana-Champaign*

ARS-P19.6 – PER-PATCH METRIC LEARNING FOR ROBUST IMAGE MATCHING
Sezer KARAOGLU, *University of Amsterdam*
Ivo EVERTS, *University of Amsterdam*
Jan VAN GEMERT, *University of Amsterdam*
Theo GEVERS, *University of Amsterdam*

ARS-P21: Multimedia Content Analysis

Tuesday, 14:00-16:00
POSTER
Room: **POSTER C**

Session Chair(s): Jean-Luc DUGELAY, *Eurecom*

ARS-P21.1 – SCALABLE ACTION LOCALIZATION WITH KERNEL-SPACE HASHING
Andrei STOIAN, *CNAM*
Marin FERECATU, *CNAM*
Jenny BENOIS-PINEAU, *LABRI*
Michel CRUCIANU, *CNAM*

ARS-P21.2 – ANALYZING USER PREFERENCE FOR SOCIAL IMAGE RECOMMENDATION
Xianming LIU, *University of Illinois, Urbana-Champaign*
Min-Hsuan TSAI, *Google*
Thomas HUANG, *University of Illinois, Urbana-Champaign*

ARS-P21.3 – VISUAL VOICE ACTIVITY DETECTION BASED ON SPATIOTEMPORAL INFORMATION AND BAG OF WORDS
Foteini PATRONA, *Aristotle University of Thessaloniki*
Alexandros IOSIFIDIS, *Aristotle University of Thessaloniki*
Anastasios TEFAS, *Aristotle University of Thessaloniki*
Nikolaos NIKOLAIDIS, *Aristotle University of Thessaloniki*
Ioannis PITAS, *Aristotle University of Thessaloniki*

ARS-P21.4 – EVENT RETRIEVAL USING MOTION BARCODES
Gil BEN-ARTZI, *The Hebrew University of Jerusalem*
Michael WERMAN, *The Hebrew University of Jerusalem*
Shmuel PELEG, *The Hebrew University of Jerusalem*

ARS-P21.5 – LEARNING UNIFIED SPARSE REPRESENTATIONS FOR MULTI-MODAL DATA
Kaiye WANG, *NLPR, CASIA*
Wei WANG, *NLPR, CASIA*
Liang WANG, *NLPR, CASIA*

ARS-P45: Image Segmentation II

Tuesday, 14:00-16:00
POSTER
Room: **POSTER E**

Session Chair(s): Lionel LACASSAGNE, *University Paris-Sud*

ARS-P45.1 – SEEDED LAPLACIAN: AN INTERACTIVE IMAGE SEGMENTATION APPROACH USING EIGENFUNCTIONS
Ahmed TAHA, *Faculty of Engineering - Alexandria University*
Marwan TORKI, *Faculty of Engineering - Alexandria University*

ARS-P45.2 – LEARNING DISCRIMINATIVE OCCLUSION FEATURE FOR DEPTH ORDERING INFERENCE ON MONOCULAR IMAGE
Anlong MING, *Beijing University of Posts and Telecommunications*
Baofeng XUN, *Beijing University of Posts and Telecommunications*
Jia NI, *Beijing University of Posts and Telecommunications*
Mingfei GAO, *Beijing University of Posts and Telecommunications*
Yu ZHOU, *Beijing University of Posts and Telecommunications*

ARS-P45.3 – COUPLED ENSEMBLE GRAPH CUTS AND OBJECT VERIFICATION FOR ANIMAL SEGMENTATION FROM HIGHLY CLUTTERED VIDEOS
Zhi ZHANG, *UNIVERSITY OF MISSOURI*
Tony X. HAN, *UNIVERSITY OF MISSOURI*
Zhihai HE, *UNIVERSITY OF MISSOURI*

★ **ARS-P45.4 –** SELF-SUPERVISED ROAD DETECTION FROM A SINGLE IMAGE
Xiqun LU, *Zhejiang University*

ARS-P45.5 – SCREEN CONTENT IMAGE SEGMENTATION USING LEAST ABSOLUTE DEVIATION FITTING
Shervin MINAEE, *New York University*
Yao WANG, *New York University*

ARS-P45.6 – TRANSDUCTIVE VIDEO CO-SEGMENTATION ON THE TEMPORAL TREES
Zhihui FU, *Shanghai Jiao Tong University*
Botao WANG, *Shanghai Jiao Tong University*
Hongkai XIONG, *Shanghai Jiao Tong University*

COM-O2: Video Coding I

Tuesday, 14:00-16:00
LECTURE
Room: **202**
Session Chair(s): Stéphane COULOMBE, *École de technologie supérieure*

14:00 ★ COM-O2.1 – FAST H.264 TO HEVC TRANSCODER BASED ON POST-ORDER TRAVERSAL OFQUADTREE STRUCTURE
Jean-françois FRANCHE, *École de technologie supérieure (ÉTS)*
Stéphane COULOMBE, *École de technologie supérieure (ÉTS)*

14:20 COM-O2.2 – MODE-DEPENDENT TRANSFORM COMPETITION FOR HEVC
Adrià ARRUFAT, *Orange*
Pierrick PHILIPPE, *Orange*
Olivier DÉFORGES, *IETR/INSA*

14:40 COM-O2.3 – HIGH PERFORMANCE LOOP FILTER FOR HEVC
Wai-kuen CHAM, *The Chinese University of HongKong*
Qinglong HAN, *The Chinese University of HongKong*

15:00 COM-O2.4 – IMAGE CODING WITH INCOMPLETE TRANSFORM COMPETITION FOR HEVC
Adrià ARRUFAT, *Orange*
Anne-flore PERRIN, *Orange*
Pierrick PHILIPPE, *B-COM*

15:20 COM-O2.5 – FAST MOTION BLUR COMPENSATION IN HEVC USING FIXED-LENGTH FILTER
Yiqun LIU, *Leibniz Universität Hannover*
Jörn OSTERMANN, *Leibniz Universität Hannover*

15:40 COM-O2.6 – STATISTICAL APPROACH FOR MOTION ESTIMATION SKIPPING (SAMEK)
Li YU, *Xi'an Jiaotong-Liverpool University*
Jimin XIAO, *Xian Jiaotong-Liverpool University*
Tammam TILLO, *Xian Jiaotong-Liverpool University*
Ce ZHU, *University of Electronic Science and Technology of China*

ELI-O5: Multiview / 3D Video Coding

Tuesday, 14:00-16:00
LECTURE
Room: **203**
Session Chair(s): Aljoša SMOLIC, *Disney Research Zürich*

14:00 **ELI-O5.1 –** EFFICIENT DEPTH INTRA MODE DECISION BY REFERENCE PIXELS CLASSIFICATIONIN 3D-HEVC
Hong-Bin ZHANG, *Nanjing University of Science and Technology*
Chang-Hong FU, *Nanjing University of Science and Technology*
Yui-Lam CHAN, *The Hong Kong Polytechnnic University*
Sik-Ho TSANG, *The Hong Kong Polytechnic University*
Wan-Chi SIU, *The Hong Kong Polytechnic University*

14:20 **ELI-O5.2 –** UPSAMPLED-VIEW DISTORTION OPTIMIZATION FOR MIXED RESOLUTION 3D VIDEO CODING
Michal JOACHIMIAK, *Tampere University of Technology*
Miska Matias HANNUKSELA, *Nokia Research Center*
Payman AFLAKI, *Nokia Research Center*
Moncef GABBOUJ, *Tampere University of Technology*

14:40 **ELI-O5.3 –** EFFICIENT CALIBRATION FOR MULTI-PLANE HOMOGRAPHY USING A LASER LEVEL
Yen-chou TAI, *Dept. of Computer Science, National Chiao Tung University*
Chin-Wei LIU, *Dept. of Computer Science, National Chiao Tung University*
Yong-Sheng CHEN, *Dept. of Computer Science, National Chiao Tung University*
Jen-hui CHUANG, *Dept. of Computer Science, National Chiao Tung University*

15:00 **ELI-O5.4 –** OVERVIEW OF THE MULTIVIEW HIGH EFFICIENCY VIDEO CODING (MV-HEVC) STANDARD
Miska Matias HANNUKSELA, *Nokia Technologies*
Ye YAN, *University of Science and Technology of China*
Xuehui HUANG, *University of Science and Technology of China*
Houqiang LI, *University of Science and Technology of China*

15:20 **ELI-O5.5 –** FAST ENCODING OF 3D COLOR-PLUS-DEPTH VIDEO BASED ON 3D-HEVC
Wen-nung LIE, *National Chung Cheng University*
Yan-heng LU, *National Chung Cheng University*

15:40 **ELI-O5.6 –** BLOCK DEPENDANT DICTIONARY BASED DISPARITY COMPENSATION FOR STEREO IMAGE CODING
Gabriel DAUPHIN, *L2TI, Institut Galilée, Université Paris 13 Sorbonne Paris Cité*
Mounir KAANICHE, *L2TI, Institut Galilée, Université Paris 13 Sorbonne Paris Cité*
Anissa MOKRAOUI, *L2TI, Institut Galilée, Université Paris 13 Sorbonne Paris Cité*

ELI-P10: Text and Characters in Images

Tuesday, 14:00-16:00
POSTER
Room: **POSTER M**

Session Chair(s): Hideaki GOTO, *Tohoku University*

ELI-P10.1 – CHARACTER RECOGNITION FOR THE MACHINE READER ZONE OF ELECTRONIC IDENTITY CARDS
Hyeogjin LEE, *Seoul National University*
Nojun KWAK, *Seoul National University*

ELI-P10.2 – SCENE TEXT DETECTION BASED ON COMPONENT-LEVEL FUSION AND REGION-LEVEL VERIFICATION
Guanghan NING, *University of Missouri-Columbia*
Tony X. HAN, *University of Missouri-Columbia*
Zhihai HE, *University of Missouri-Columbia*

ELI-P10.3 – FAST AND ACCURATE CANDIDATE REDUCTION USING THE MULTICLASS LDA FOR JAPANESE/CHINESE CHARACTER RECOGNITION
Ryosuke ODATE, *Tohoku University*
Hideaki GOTO, *Tohoku University*

ELI-P10.4 – FEATURE EXTRACTION OF HANDWRITTEN KANNADA CHARACTERS USING CURVELETS AND PRINCIPAL COMPONENT ANALYSIS
Padma M.C, *P.E.S. College of Engineering*
Saleem PASHA, *P.E.S. College of Engineering, Mandya, Karnataka, India*

ELI-P10.5 – A PATTERN RECOGNITION APPROACH TO MAKE ACCESSIBLE THE GEOGRAPHIC IMAGES FOR BLIND AND VISUALLY IMPAIRED
Zehira HADDAD, *Université Paris 8*
Yong CHEN, *Université Paris 8*
Jaime LOPEZ KRAHE, *Université Paris 8*

ELI-P10.6 – IN-AIR HANDWRITTEN CHINESE CHARACTER RECOGNITION USING MULTI-STAGE CLASSIFIER BASED ON ADAPTIVE DISCRIMINATIVE LOCALITY ALIGNMENT
Xiwen QU, *University of Chinese Academy of Sciences*
Weiqiang WANG, *University of Chinese Academy of Sciences*
Ke LU, *University of Chinese Academy of Sciences*
Ning XU, *University of Chinese Academy of Sciences*

ELI-P2: 3D Object and Scene Reconstruction I

Tuesday, 14:00-16:00
POSTER
Room: **POSTER 0**

Session Chair(s): Peter DOERSCHUK, *Cornell University*

ELI-P2.1 – VARIATIONAL MULTI-IMAGE STEREO MATCHING
Simon DONNÉ, *iMinds-IPI-UGent*
Bart GOOSSENS, *iMinds-IPI-UGent*
Wilfried PHILIPS, *iMinds-IPI-UGent*
Jan AELTERMAN, *iMinds-IPI-UGent*

ELI-P2.2 – FLUCTUATIONS OF DISPARITY SPACE IMAGE FOR STEREO MATCHING IN UNTEXTURED REGIONS
Hongmei ZHU, *Beihang University*
Jihao YIN, *Beihang University*

ELI-P2.3 – LEARNING DEPTH FROM A SINGLE IMAGE USING VISUAL-DEPTH WORDS
Sunok KIM, *Yonsei University*
Sunghwan CHOI, *Yonsei University*
Kwanghoon SOHN, *Yonsei University*

ELI-P2.4 – DEPTH EDGE BASED TRILATERAL FILTER METHOD FOR STEREO MATCHING
Dongming CHEN, *École Centrale de Lyon*
Mohsen ARDABILIAN, *École Centrale de Lyon*
Liming CHEN, *École Centrale de Lyon*

★ **ELI-P2.5 –** DEPTH FROM ACCIDENTAL MOTION USING GEOMETRY PRIOR
Sung-hoon IM, *KAIST*
Gyeongmin CHOE, *KAIST*
Hae-Gon JEON, *KAIST*
In So KWEON, *KAIST*

ELI-P2.6 – USING LINE CONSISTENCY TO ESTIMATE 3D INDOOR MANHATTAN SCENE LAYOUT FROM A SINGLE IMAGE
Hsing-Chun CHANG, *National Tsing Hua University*
Szu-Hao HUANG, *National Tsing Hua University*
Shang-Hong LAI, *National Tsing Hua University*

ELI-P11: 3D Object and Scene Reconstruction II

Tuesday, 14:00-16:00
POSTER
Room: **POSTER N**

Session Chair(s): Peter DOERSCHUK, *Cornell University*

ELI-P11.1 – MESH SEGMENTATION WITH CONNECTING PARTS FOR 3D OBJECT PROTOTYPING
Karl APAZA-AGÜERO, *Universidade Federal do Paraná*
Luciano SILVA, *Universidade Federal do Paraná*
Olga BELLON, *Universidade Federal do Paraná*

ELI-P11.2 – WHAT DOES A SINGLE LIGHT-RAY REVEAL ABOUT A TRANSPARENT OBJECT?
Chia-Yin TSAI, *Carnegie Mellon University*
Ashok VEERARAGHAVAN, *Rice University*
Aswin C. SANKARANARAYANAN, *Carnegie Mellon University*

ELI-P11.3 – HIGH-ACCURACY 3D IMAGE STITCHING FOR ROBOT-BASED INSPECTION SYSTEMS
Marco ULRICH, *Technische Universität München*
Andreas FORSTNER, *Technische Universität München*
Gunther REINHART, *Technische Universität München*

★ **ELI-P11.4 –** RECONSTRUCTION FOR STOCHASTIC 3-D SIGNALS WITH SYMMETRIC STATISTICS IN NOISE: ELECTRON MICROSCOPY OF VIRUS PARTICLES
Nan XU, *Cornell University*
Peter DOERSCHUK, *Cornell University*

ELI-P11.5 – POINT SET REGISTRATION BASED ON IMPLICIT SURFACE FITTING WITH EQUIVALENT DISTANCE
Tong LIU, *Harbin Institute of Technology*
Wang LIU, *Harbin Institute of Technology*
Liyan QIAO, *Harbin Institute of Technology*
Tiannan LUO, *Harbin Institute of Techonology*
Xiyuan PENG, *Harbin Institute of Technology*

ELI-P11.6 – STRUCTURED REPRESENTATION-BASED ROBUST AGILE-BEAM LADAR IMAGING
Vishal M PATEL, *University of Maryland*
Michael A. POWERS, *General Dynamics*

IFS-P1: Content and Privacy Protection

Tuesday, 14:00-16:00
POSTER
Room: **POSTER K**

Session Chair(s): Stefano TUBARO, Politecnico di Milano

IFS-P1.1 – AFFECT-PRESERVING PRIVACY PROTECTION OF VIDEO
Wanxin XU, *University of Kentucky*
Sen-Ching Samson CHEUNG, *University of Kentucky*
Neelkamal SOARES, *Geisinger Health System*

IFS-P1.2 – PHYLOGENY RECONSTRUCTION FOR MISALIGNED AND COMPRESSED VIDEO SEQUENCES
Filipe COSTA, *University of Campinas*
Silvia LAMERI, *Politecnico di Milano*
Paolo BESTAGINI, *Politecnico di Milano*
Zanoni DIAS, *University of Campinas*
Anderson ROCHA, *University of Campinas*
Marco TAGLIASACCHI, *Politecnico di Milano*
Stefano TUBARO, *Politecnico di Milano*

IFS-P1.3 – INVARIANT CHARACTERIZATION OF DOVID SECURITY FEATURES USING A PHOTOMETRIC DESCRIPTOR
Svorad STOLC, *Austrian Institute of Technology (AIT)*
Daniel SOUKUP, *Austrian Institute of Technology (AIT)*
Reinhold HUBER-MOERK, *Austrian Institute of Technology (AIT)*

IFS-P1.4 – FACE DE-IDENTIFICATION WITH EXPRESSIONS PRESERVATION
Geoffrey LETOURNEL, *LaBRI*
Aurelie BUGEAU, *LaBRI*
Vinh-Thong TA, *LaBRI*
Jean Philippe DOMENGER, *LaBRI*

IFS-P1.5 – GRAPH REGULARIZED LOW-RANK MATRIX RECOVERY FOR ROBUST PERSON RE-IDENTIFICATION
Ming-Chia TSAI, *Academia Sinica*
Chia-Po WEI, *Academia Sinica*
Yu-Chiang Frank WANG, *Academia Sinica*

IFS-P1.6 – NEAR-DUPLICATE DETECTION AND ALIGNMENT FOR MULTI-VIEW VIDEOS
Ambra MELLONI, *Politecnico di Milano*
Silvia LAMERI, *Politecnico di Milano*
Paolo BESTAGINI, *Politecnico di Milano*
Marco TAGLIASACCHI, *Politecnico di Milano*
Stefano TUBARO, *Politecnico di Milano*

IFS-P3: Robust Hashing and Counter-forensics

Tuesday, 14:00-16:00
POSTER
Room: **POSTER L**

Session Chair(s): Stefano TUBARO, *Politecnico di Milano*

IFS-P3.1 – A STUDY ON PUF CHARACTERISTICS FOR COUNTERFEIT DETECTION
Chau-Wai WONG, *University of Maryland, College Park*
Min WU, *University of Maryland, College Park*

IFS-P3.2 – REMOVING CAMERA FINGERPRINT TO DISGUISE PHOTOGRAPH SOURCE
Hui ZENG, *Sun Yat-sen University*
Jiansheng CHEN, *Sun Yat-sen University*
Xiangui KANG, *Sun Yat-sen University*
Wenjun ZENG, *University of Missouri-Columbia*

IFS-P3.3 – MULTI-FEATURE HASHING BASED ON SNR MAXIMIZATION
Honghai YU, *University of Illinois at Urbana-Champaign*
Pierre MOULIN, *University of Illinois at Urbana-Champaign*

IFS-P3.4 – COUNTERING ANTI-FORENSICS OF IMAGE RESAMPLING
Anjie PENG, *School of Information Science and Technology, Sun Yat-Sen University*
Hui ZENG, *School of Information Science and Technology, Sun Yat-Sen University*
Xiaodan LIN, *School of Information Science and Technology, Sun Yat-Sen University*
Xiangui KANG, *School of Information Science and Technology, Sun Yat-Sen University*

SMR-O3: Texture Representation

Tuesday, 14:00-16:00
LECTURE Room: **204B**
Session Chair(s): David NEUHOFF, *University of Michigan*

14:00 SMR-O3.1 – A MULTI-SCALE LOCAL BINARY PATTERN BASED ON PATH INTEGRAL FOR TEXTURE CLASSIFICATION
Qiuyan LIN, *Institute of Computer Science and Technology, Peking University*
Wenfa QI, *Institute of Computer Science and Technology, Peking University*

14:20 SMR-O3.2 – DISTRIBUTIONS OF LOCAL RADIUS INDICES ON PERIODIC TESSELLATIONS
Yuanhao ZHAI, *University of Michigan*
David NEUHOFF, *University of Michigan*

14:40 SMR-O3.3 – MEDIAN ROBUST EXTENDED LOCAL BINARY PATTERN FOR TEXTURE CLASSIFICATION
Li LIU, *National University of Defense Technology*
Paul FIEGUTH, *University of Waterloo*
Matti PIETIKAINEN, *University of Oulu*
Songyang LAO, *National University of Defense Technology*

15:00 SMR-O3.4 – DATA-DRIVEN PROGRESSIVE COMPRESSION OF COLORED 3D MESH
Caroline MENDES, *Universidade Federal do Parana*
Karl APAZA-AGÜERO, *Universidade Federal do Parana*
Luciano SILVA, *Universidade Federal do Parana*
Olga BELLON, *Universidade Federal do Parana*

15:20 SMR-O3.5 – TEXTURE CHARACTERIZATION VIA IMPROVED DETERMINISTIC WALKS ON IMAGE-GENERATED COMPLEX NETWORK
Leandro COUTO, *Federal University of Uberlandia*
Thiago RIBEIRO, *Federal University of Uberlandia*
Andre BACKES, *Federal University of Uberlandia*
Celia BARCELOS, *Federal University of Uberlandia*

15:40 SMR-O3.6 – HISTOGRAM OF GRADIENT MAGNITUDES - A ROTATION INVARIANT TEXTURE-DESCRIPTOR
Monika SHARMA, *TCS Innovation Labs*
Hiranmay GHOSH, *TCS Innovation Labs*

SMR-P5: Image Representation

Tuesday, 14:00-16:00
POSTER Room: **POSTER J**
Session Chair(s): Roberto A. LOTUFO, *Universidade Estadual de Campinas*

SMR-P5.1 – MULTI-SCALE BISECTOR INTEGRALS: AN INVARIANT DESCRIPTOR FOR ACCURATE SHAPE RETRIEVAL
Bin WANG, *School of Information and Engineering, Nanjing University of Finance and Economics*
Yongsheng GAO, *Griffith Univeristy*

SMR-P5.2 – SHORT LOCAL DESCRIPTORS FROM 2D CONNECTED PATTERN SPECTRA
Petra BOSILJ, *Université de Bretagne Sud - IRISA*
Ewa KIJAK, *Université de Rennes 1 - IRISA*
Michael H.F. WILKINSON, *University of Groningen*
Sébastien LEFÈVRE, *Université de Bretagne Sud - IRISA*

SMR-P5.3 – PERFORMANCE ANALYSIS OF RETARGETING PYRAMID AND ITS APPLICATIONS
Ryosuke MORITA, *Tokyo University of Agriculture and Technology*
Keiichiro SHIRAI, *Shinshu University*
Yuichi TANAKA, *Tokyo University of Agriculture and Technology*

SMR-P5.4 – SCENE TEXT RECOGNITION WITH DEEPER CONVOLUTIONAL NEURAL NETWORKS
Yuqi ZHANG, *Institute of Automation, Chinese Academy of Sciences*
Wei WANG, *Institute of Automation, Chinese Academy of Sciences*
Liang WANG, *Institute of Automation, Chinese Academy of Sciences*

SMR-P5.5 – ANISOTROPIC DATA-SPECIFIC WAVELETS FOR STRUCTURE-AWARE IMAGE PROCESSING
Qingzheng WANG, *State Key Laboratory of Virtual Technology and Systems, Beihang University*
Shuai LI, *State Key Laboratory of Virtual Technology and Systems, Beihang University*
Hong QIN, *Stony Brook University*
Aimin HAO, *State Key Laboratory of Virtual Technology and Systems, Beihang University*

SMR-P5.6 – AN ARRAY-BASED NODE-ORIENTED MAX-TREE REPRESENTATION
Roberto SOUZA, *UNICAMP*
Letícia RITTNER, *UNICAMP*
Rubens MACHADO, *CTI Renato Archer*
Roberto LOTUFO, *UNICAMP*

SMR-P7: Object-based Representation

Tuesday, 14:00-16:00
POSTER
Room: **POSTER H**

Session Chair(s): Xiantong ZHEN, *University of Western Ontario*

SMR-P7.1 – DISTINCTIVE ACTION SKETCH
Ying ZHENG, *Harbin Institute of Technology*
Hongxun YAO, *Harbin Institute of Technology*
Xiaoshuai SUN, *Harbin Institute of Technology*
Sicheng ZHAO, *Harbin Institute of Technology*

SMR-P7.2 – A NEW UNSUPERVISED MODEL OF ACTION RECOGNITION
Li XIAOQIANG, *School of Computer Engineer and Science,Shanghai University*
Wang DAN, *School of Computer Engineer and Science,Shanghai University*

SMR-P7.3 – DIMENSIONALITY REDUCTION BY SUPERVISED LOCALITY ANALYSIS
Xiantong ZHEN, *University of Western Ontario*
Peipei PENG, *Harbin Engineering University*
Xuezhi XIANG, *Harbin Engineering University*
Lei ZHANG, *Harbin Engineering University*

SMR-P7.4 – ROBUST LOCAL AND GLOBAL SHAPE CONTEXT FOR TATTOO IMAGE MATCHING
Joonsoo KIM, *Purdue University*
Albert PARRA, *Purdue University*
Jiaju YUE, *Purdue University*
He LI, *Purdue University*
Edward J. DELP, *Purdue University*

SMR-P7.5 – TERRORISM VIDEO RECOGNITION WITH SEMANTIC CONCEPTS DETECTING AND RE-RANKING
Yifan SONG, *School of Information and Communication Engineering, BUPT*
Zhicheng ZHAO, *Beijing Key Laboratory of Network System and Network Culture, BUPT*
Fei SU, *Beijing Key Laboratory of Network System and Network Culture, BUPT*

SMR-P7.6 – SALIENCE BASED HIERARCHICAL FUZZY REPRESENTATION FOR OBJECTRECOGNITION
Lifeng YANG, *Tianjin University*
Hu QINGHUA, *Tianjin University*
Lei ZHAO, *Tianjin University*
Yin LI, *Tianjin University*

SNT-S5: Show & Tell V

Tuesday, 14:00-16:00
Room: **SHOW & TELL**

SHOW & TELL
Session Chair(s): Fabrice LABEAU, *McGill University*

SNT-S5.1 – CALIBRATION TOOL FOR POST-PRODUCTION
Lorenzo SORGI, *Technicolor*
Andrey BUSHNEVSKIY, *Technicolor*
Ralf OSTERMANN, *Technicolor*
This demonstration presents an innovative camera calibration tool that focuses on producing high-quality results with minimum manual interaction. The technology is particularly suited for easy calibration of wide-angle and super-wide-angle lenses.

SNT-S5.2 – POINT LOCALISATION FROM MULTI-CAMERA SYSTEMS: PERFORMANCE BOUNDS AND ALGORITHMS
Alireza GHASEMI, *EPFL*
Adam SCHOLEFIELD, *EPFL*
Martin VETTERLI, *EPFL*
In this Show & Tell demonstration, we will visualise the localisation performance of different multi-camera systems and triangulation algorithms. For clarity, we will work in 2-D, so points will be localised within polygons. We will provide interactive tools that allow the user to investigate and gain insight into the impact of camera setups and localisation algorithms

SNT-S5.3 – GOAL-ORIENTED TOP-DOWN PROBABILISTIC VISUAL ATTENTION MODEL FOR RECOGNITION OF MANIPULATED OBJECTS IN EGOCENTRIC VIDEOS
Jenny BENOIS-PINEAU, *Laboratoire Bordelais de Recherches en Informatique (LaBRI)*
In this demo we present several videos showing how top-down saliency maps can be built from the knowledge of hands and arms poses. We show how they can adapt to the shape of manipulated objects on different challenging datasets of egocentric vision.

SNT-S5.4 – JOINT OPTIMIZATION APPROACH TO METAL ARTIFACT REDUCTION AND SEGMENTATION FOR CT IMAGES
Pengchong JIN, *Purdue University*
Dong Hye YE, *Purdue University*
Charles BOUMAN, *Purdue University*
In this demonstration, we show that it is possible to substantially improve segmentation accuracy be formulating these two problems of CT image segmentation and artifact reduction as a single joint optimization problem. The demonstration will graphically and dynamically illustrate this alternating approach in detail. Specially, we will show the evolution of restored image and the segmentation after each iteration in an animated video.

SS6-O1: Compact Descriptor for Visual Search

Tuesday, 14:00-16:00
LECTURE
Room: **205B**

Session Chair(s): Rongrong JI, *Xiamen University*

14:00 SS6-O1.1 – COLOR NAMES LEARNING USING CONVOLUTIONAL NEURAL NETWORKS
Yuhang WANG, *The National Laboratory of Pattern Recognition, Institute of Automation, CAS*
Jing LIU, *The National Laboratory of Pattern Recognition, Institute of Automation, CAS*
Jinqiao WANG, *The National Laboratory of Pattern Recognition, Institute of Automation, CAS*
Yong LI, *The National Laboratory of Pattern Recognition, Institute of Automation, CAS*
Hanqing LU, *The National Laboratory of Pattern Recognition, Institute of Automation, CAS*

14:20 SS6-O1.2 – AN EFFECTIVE EYE STATES DETECTION METHOD BASED ON THE PROJECTION OF THE GRAY INTERVAL DISTRIBUTION
Xianming LIN, *Cognitive Science Department of Xiamen University*
Ling CAI, *School of Information Science and Engineering, Xiamen University, China*
Shao-Zi LI, *School of Information Science and Engineering, Xiamen University*
Rongrong JI, *School of Information Science and Engineering, Xiamen University*

14:40 SS6-O1.3 – LEARNING DEEP COMPACT DESCRIPTOR WITH BAGGING AUTO-ENCODERS FOR OBJECT RETRIEVAL
Haiyun GUO, *CASIA*
Jinqiao WANG, *CASIA*
Hanqing LU, *CASIA*

15:00 SS6-O1.4 – AN EFFICIENT CODING FRAMEWORK FOR COMPACT DESCRIPTORS EXTRACTED FROM VIDEO SEQUENCE
Zhangshuai HUANG, *Institute of Digital Media, School of EE & CS, Peking University*
Ling-Yu DUAN, *Institute of Digital Media, School of EE & CS, Peking University*
Jie LIN, *Institute for Infocomm Research*

Shiqi WANG, *Dept. of Electrical and Computer Engineering, University of Waterloo*
Siwei MA, *Institute of Digital Media, School of EE & CS, Peking University*
Tiejun HUANG, *Institute of Digital Media, School of EE & CS, Peking University*

15:20 SS6-O1.5 – SENTIMENT ANALYSIS OF CHINESE MICRO-BLOG BASED ON MULTI-MODAL CORRELATION MODEL
Lingxiao LI, *Cognitive Science Department, Xiamen University*
Shao-Zi LI, *Cognitive Science Department, Xiamen University*
Donglin CAO, *Cognitive Science Department, Xiamen University*
Dazhen LIN, *Cognitive Science Department, Xiamen University*
Rongrong JI, *Cognitive Science Department, Xiamen University*

TEC-P18: Multi-image and Video Super-Resolution and Restoration

Tuesday, 14:00-16:00
POSTER Room: **POSTER F**
Session Chair(s): Aggelos K. KATSAGGELOS, *Northwestern University*

TEC-P18.1 – HYBRID SUPER-RESOLUTION COMBINING EXAMPLE-BASED SINGLE-IMAGE AND INTERPOLATION-BASED MULTI-IMAGE RECONSTRUCTION APPROACHES
Michel BÄTZ, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*
Andrea EICHENSEER, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*
Jürgen SEILER, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*
Markus JONSCHER, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*
André KAUP, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*

★ **TEC-P18.2 –** DICTIONARY-BASED MULTIPLE FRAME VIDEO SUPER-RESOLUTION
Qiqin DAI, *Northwestern University*
Seunghwan YOO, *Northwestern University*
Armin KAPPELER, *Northwestern University*
Aggelos K. KATSAGGELOS, *Northwestern University*

TEC-P18.3 – FLUOROSOCOPIC SEQUENCE DENOISING USING A MOTION COMPENSATED MULTI-SCALE TEMPORAL FILTERING
Carole AMIOT, *Thales*
Catherine GIRARD, *Thales*
Jérémie PESCATORE, *Thales*
Jocelyn CHANUSSOT, *Gipsa-Lab - Université Grenoble-Alpes*
Michel DESVIGNES, *Gipsa-Lab - Université Grenoble-Alpes*

★ **TEC-P18.4 –** FACIAL VIDEO SUPER RESOLUTION USING SEMANTIC EXEMPLAR COMPONENTS
Xu CHEN, *Sharp Labs of America*
Anustup CHOUDHURY, *Sharp Labs of America*
Peter VAN BEEK, *Sharp Labs of America*
Andrew SEGALL, *Sharp Labs of America*

TEC-P18.5 – SUPER-RESOLUTION FOR INCONSISTENT SCALABLE VIDEO STREAMING
Abo-Talib MAHFOODH, *Michigan State University*
Debargha MUKHERJEE, *Michigan State University*
Hayder RADHA, *Michigan State University*

TEC-P18.6 – MULTI-POSE FACE HALLUCINATION VIA NEIGHBOR EMBEDDING FOR FACIAL COMPONENTS
Yanghao LI, *Peking University*
Jiaying LIU, *Peking University*
Wenhan YANG, *Peking University*
Zongming GUO, *Peking University*

TEC-P32: Medical Image Analysis

Tuesday, 14:00-16:00
POSTER
Room: **POSTER G**

Session Chair(s): Jean-Philippe THIRAN, *EPFL*

TEC-P32.1 – ACCELERATED MICROSTRUCTURE IMAGING VIA CONVEX OPTIMISATION FOR REGIONS WITH MULTIPLE FIBRES (AMICO_X)
Anna AURÍA, *EPFL*
David ROMASCANO, *EPFL*
Erick CANALES-RODRÍGUEZ, *FIDMAG Germanes Hospitalaries*
Yves WIAUX, *ISSS, Heriot-Watt University*
Tim DYRBY, *Danish Research Centre for Magnetic Resonance, Copenhagen University Hospital*
Daniel ALEXANDER, *CMIC, University College London, London, United Kingdom*
Jean-philippe THIRAN, *EPFL*
Alessandro DADUCCI, *EPFL*

TEC-P32.2 – DETECTING DIFFERENT SUB-TYPES OF ACUTE MYELOGENOUS LEUKEMIA USING DICTIONARY LEARNING AND SPARSE REPRESENTATION
Omid SARRAFZADEH, *Isfahan University of Medical Sciences*
Hossein RABBANI, *Isfahan University of Medical Sciences*
Alireza MEHRI DEHNAVI, *Isfahan University of Medical Sciences*
Ardeshir TALEBI, *Isfahan University of Medical Sciences*

TEC-P32.3 – AN ALGORITHM BASED ON LBPV AND MIL FOR LEFT ATRIAL THROMBI DETECTION USING TRANSESOPHAGEAL ECHOCARDIOGRAPHY
Jianrui DING, *Harbin Institute of Technology*
Min XIAN, *UTAH STATE UNIVERSITY*
Hengda CHENG, *Utah State University*
Yingtao ZHANG, *Harbin Institute of Technology*
Fei XU, *Utah State University*

TEC-P32.4 – BEATING CILIA IDENTIFICATION IN FLUORESCENCE MICROSCOPE IMAGES FOR ACCURATE CBF MEASUREMENT
Fan ZHANG, *University of Sydney*
Weidong CAI, *University of Sydney*
Yang SONG, *University of Sydney*
Paul YOUNG, *Woolcock Institute of Medical Research & University of Sydney*
Daniela TRAINI, *Woolcock Institute of Medical Research & University of Sydney*
Lucy MORGAN, *Concord Repatriation General Hospital & University of Sydney*
Hui-Xin HONG, *Woolcock Institute of Medical Research & University of Sydney*
Lachlan BUDDLE, *Concord Repatriation General Hospital*
Dagan FENG, *University of Sydney*

TEC-P32.5 – OPTIMAL TRANSPORT USING HELMHOLTZ-HODGE DECOMPOSITION AND FIRST-ORDER PRIMAL-DUAL ALGORITHMS
Morgane HENRY, *Laboratoire Jean Kuntzmann*
Emmanuel MAITRE, *Laboratoire Jean Kuntzmann*
Valerie PERRIER, *Laboratoire Jean Kuntzmann*

TEC-P32.6 – CLASS-SPECIFIC HIERARCHICAL CLASSIFICATION FOR HEP-2 SPECIMEN IMAGES
Krati GUPTA, *Indian Institute of Technology Mandi*
Vibha GUPTA, *Indian Institute of Technology Mandi*
Arnav BHAVSAR, *Indian Institute of Technology Mandi*
Anil SAO, *Indian Institute of Technology Mandi*

ARS-O19: Visual Biometrics

Tuesday, 16:30-18:30
LECTURE
Room: **205B**

Session Chair(s): Sen-Ching Samson CHEUNG, *University of Kentucky*

16:30 ARS-O19.1 – FACE LIVENESS DETECTION AND RECOGNITION USING SHEARLET BASED FEATURE DESCRIPTORS
Yuming LI, *City University of Hong Kong*
Lai-man PO, *City University of Hong Kong*
Xuyuan XU, *City University of Hong Kong*
Litong FENG, *City University of Hong Kong*
Fang YUAN, *City University of Hong Kong*

16:50 ★ ARS-O19.2 – FACE ANTI-SPOOFING BASED ON COLOR TEXTURE ANALYSIS
Zinelabidine BOULKENAFET, *Center for Machine Vision Research, University of Oulu*
Jukka KOMULAINEN, *Center for Machine Vision Research, University of Oulu*
Abdenour HADID, *Center for Machine Vision Research, University of Oulu*

17:10 ARS-O19.3 – RETINA VERIFICATION USING A COMBINED POINTS AND EDGES APPROACH
Ee Ping ONG, *Institute for Infocomm Research*
Yanwu XU, *Institute for Infocomm Research*
Damon Wing Kee WONG, *Institute for Infocomm Research*
Jiang LIU, *Institute for Infocomm Research*

17:30 ARS-O19.4 – IRIS SUPER-RESOLUTION VIA NONPARAMETRIC OVER-COMPLETE DICTIONARY LEARNING
Raied ALJADAANY, *Carnegie Mellon University*
Khoa LUU, *Carnegie Mellon University*
Shreyas VENUGOPALAN, *Carnegie Mellon University*
Marios SAVVIDES, *Carnegie Mellon University*

17:50 ARS-O19.5 – HIGH-ORDER INFORMATION FOR ROBUST IRIS RECOGNITION UNDER LESS CONTROLLED CONDITIONS
Guanglei YANG, *Dalian University of Technology*
Hui ZENG, *Dalian University of Technology*
Peihua LI, *Dalian University of Technology*
Lei ZHANG, *The Hong Kong Polytechnic University*

18:10 **ARS-O19.6 –** EVALUATING THE EFFECTS OF IMAGE COMPRESSION IN MOIRÉ-PATTERN-BASED FACE-SPOOFING DETECTION
Diogo GARCIA, *Universidade de Brasília*
Ricardo DE QUEIROZ, *Universidade de Brasília*

ARS-O3: Discriminative Local Features

Tuesday, 16:30-18:30
LECTURE
Room: **203**

Session Chair(s): Keigo HIRAKAWA, *University of Dayton*

16:30 **ARS-O3.1 –** HYBRID CODING OF VISUAL CONTENT AND LOCAL IMAGE FEATURES
Luca BAROFFIO, *Politecnico di Milano*
Matteo CESANA, *Politecnico di Milano*
Alessandro REDONDI, *Politecnico di Milano*
Marco TAGLIASACCHI, *Politecnico di Milano*
Stefano TUBARO, *Politecnico di Milano*

16:50 ★ **ARS-O3.2 –** COMPARING FEATURE DETECTORS: A BIAS IN THE REPEATABILITY CRITERIA.
Ives REY-OTERO, *CMLA, ENS-Cachan*
Mauricio DELBRACIO, *ECE, Duke University*
Jean-michel MOREL, *CMLA, ENS-Cachan*

17:10 **ARS-O3.3 –** IMPROVING SURF INTEREST POINT DETECTION FOR DEFOCUS BLUR ROBUSTNESS
Elhusain SAAD, *University of Dayton*
Keigo HIRAKAWA, *University of Dayton*

17:30 **ARS-O3.4 –** ASPLÜND'S METRIC DEFINED IN THE LOGARITHMIC IMAGE PROCESSING (LIP) FRAMEWORK FOR COLOUR AND MULTIVARIATE IMAGES
Guillaume NOYEL, *International Prevention Research Institute*
Michel JOURLIN, *Laboratoire Hubert Curien*

17:50 **ARS-O3.5 –** ROBUST TEXTURE FEATURES BASED ON UNDECIMATED DUAL-TREE COMPLEX WAVELETS AND LOCAL MAGNITUDE BINARY PATTERNS
Nantheera ANANTRASIRICHAI, *University of Bristol*
Jeremy BURN, *University of Bristol*
David BULL, *University of Bristol*

18:10 **ARS-O3.6 –** SPATIAL MATCHING OF SKETCHES WITHOUT POINT CORRESPONDENCE
Fang WANG, *National ICT Australia*
Yi LI, *National ICT Australia*

ARS-P22: Object Detection & Classification

Tuesday, 16:30-18:30
POSTER
Room: **POSTER B**

Session Chair(s): Maria CORNACCHIA, *Syracuse University*

ARS-P22.1 – A STATE SPACE APPROACH TO VISUAL OBJECT TRACKING
Jinwei YUAN, *University of Texas at Dallas*
Farokh BASTANI, *University of Texas at Dallas*

ARS-P22.2 – FILTERING SVM FRAME-BY-FRAME BINARY CLASSIFICATION IN A DETECTION FRAMEWORK
Alejandro BETANCOURT, *Eindhoven University of Technology*
Pietro MORERIO, *University of Genoa*
Lucio MARCENARO, *University of Genoa*
Matthias RAUTERBERG, *Eindhoven University of Technology*
Carlo REGAZZONI, *University of Genoa*

ARS-P22.3 – MOVING OBJECT DETECTION FROM MOVING PLATFORMS USING LAGRANGE MULTIPLIER
Agwad ELTANTAWY, *Memorial University of Newfoundland*
Mohamed SHEHATA, *Memorial University of Newfoundland*

ARS-P22.4 – SCALE ESTIMATION WITH DIFFERENCE OF ORDERED RESIDUALS
Maria CORNACCHIA, *Syracuse University*
Senem VELIPASALAR, *Syracuse University*

★ **ARS-P22.5 –** OBJECTNESS ESTIMATION USING EDGES
Hongzhen WANG, *Institute of Automation, Chinese Academy of Sciences*
Zikun LIU, *Institute of Automation, Chinese Academy of Sciences*
Lingfeng WANG, *Institute of Automation, Chinese Academy of Sciences*
Lubin WENG, *Institute of Automation, Chinese Academy of Sciences*
Chunhong PAN, *Institute of Automation, Chinese Academy of Sciences*

ARS-P22.6 – EFFICIENT 2×2 BLOCK-BASED CONNECTED COMPONENTS LABELING ALGORITHMS
Diêgo SANTIAGO, *Federal University of Pernambuco*
Ing Ren TSANG, *Federal University of Pernambuco*
George CAVALCANTI, *Federal University of Pernambuco*
Ing Jyh TSANG, *Alcatel-Lucent*

ARS-P23: Object Detection and Tracking II

Tuesday, 16:30-18:30
POSTER
Room: **POSTER A**

Session Chair(s): David NEUHOFF, *University of Michigan*

★ **ARS-P23.1 –** FITTING 3D MORPHABLE MODELS USING LOCAL FEATURES
Patrik HUBER, *University of Surrey*
Zhen-Hua FENG, *Jiangnan Unversity*
William CHRISTMAS, *University of Surrey*
Josef KITTLER, *University of Surrey*
Matthias RÄTSCH, *Reutlingen University*

ARS-P23.2 – IMPROVING DEEP CONVOLUTIONAL NEURAL NETWORKS WITH UNSUPERVISED FEATURE LEARNING
Kien NGUYEN, *Queensland University of Technology*
Clinton FOOKES, *Queensland University of Technology*
Sridha SRIDHARAN, *Queensland University of Technology*

ARS-P23.3 – ADAPTIVE SEARCH OF BACKGROUND MODELS FOR OBJECT DETECTION IN IMAGES TAKEN BY MOVING CAMERAS
Tsubasa MINEMATSU, *Kyushu University*
Hideaki UCHIYAMA, *Kyushu University*
Atsushi SHIMADA, *Kyushu University*
Hajime NAGAHARA, *Kyushu University*
Rin-ichiro TANIGUCHI, *Kyushu University*

ARS-P23.4 – MULTIPLE KERNEL BOOSTING BASED TRACKING USING POOLING FEATURES
Ting GE, *Beijing Institute of Technology*
Yao LU, *Beijing Institute of Technology*

★ **ARS-P23.5 –** QUALITY CONTROL IN CROWDSOURCED OBJECT SEGMENTATION
Ferran CABEZAS, *Universite de Toulouse*
Axel CARLIER, *Universite de Toulouse*
Amaia SALVADOR, *Universitat Politecnica de Catalunya (UPC)*
Xavier GIRO-I-NIETO, *Universitat Politecnica de Catalunya (UPC)*
Vincent CHARVILLAT, *Universite de Toulouse*

ARS-P23.6 – EFFECT OF CAMERA-IMU DISPLACEMENT CALIBRATION ERROR ON TRACKING PERFORMANCE
Nekruzjon MAXUDOV, *Ozyegin University*
Ali Özer ERCAN, *Ozyegin University*
A. Tanju ERDEM, *Ozyegin University*

ARS-P28: Scene Analysis I

Tuesday, 16:30-18:30
POSTER
Room: **POSTER D**

Session Chair(s): Simone MILANI, *University of Padova*

ARS-P28.1 – LIVE VIDEO SYNOPSIS FOR MULTIPLE CAMERAS
Yedid HOSHEN, *Hebrew University of Jerusalem*
Shmuel PELEG, *Hebrew University of Jerusalem*

ARS-P28.2 – NOISE CORRECTION OF IMAGE LABELING IN CROWDSOURCING
Bryce NICHOLSON, *University of Central Arkansas*
Victor S. SHENG, *University of Central Arkansas*
Jing ZHANG, *Hefei University of Technology*

ARS-P28.3 – THREE-DIMENSIONAL RECONSTRUCTION FROM HETEROGENEOUS VIDEO DEVICES WITH CAMERA-IN-VIEW INFORMATION
Simone MILANI, *University of Padova*

ARS-P28.4 – CROWD FLOW SEGMENTATION IN COMPRESSED DOMAIN USING CRF
Srinivas S S KRUTHIVENTI, *Indian Institute of Science*
Venkatesh Babu RADHAKRISHNAN, *Indian Institute of Science*

ARS-P28.5 – IMPROVED RAINDROP DETECTION USING COMBINED SHAPE AND SALIENCY DESCRIPTORS WITH SCENE CONTEXT ISOLATION
Dereck WEBSTER, *Cranfield University*
Toby BRECKON, *Durham University*

ARS-P28.6 – ACTIVITY RECOGNITION WITH VOLUME MOTION TEMPLATES AND HISTOGRAMS OF 3D GRADIENTS
Emre DOGAN, *INSA-Lyon*
Gönen EREN, *Galatasaray University*
Christian WOLF, *INSA-Lyon*
Atilla BASKURT, *INSA-Lyon*

ARS-P35: Visual Learning with Domain Adaptation

Tuesday, 16:30-18:30
POSTER
Room: **POSTER C**

Session Chair(s): Yannick BERTHOUMIEU, *Bordeaux Polytechnic Institute*

ARS-P35.1 – BLURRED IMAGE RECOGNITION USING DOMAIN ADAPTATION
Xiaokang XIE, *Huazhong University of Science and Technology*
Zhiguo CAO, *Huazhong University of Science and Technology*
Yang XIAO, *Huazhong University of Science and Technology*
Mengyu ZHU, *Huazhong University of Science and Technology*
Hao LU, *Huazhong University of Science and Technology*

ARS-P35.2 – ADAPTIVE MULTI-TASK LEARNING FOR FINE-GRAINED CATEGORIZATION
Gang SUN, *Institute of Software, Chinese Academy of Sciences*
Yanyun CHEN, *Institute of Software, Chinese Academy of Sciences*
Xuehui LIU, *Institute of Software, Chinese Academy of Sciences*
Enhua WU, *Institute of Software, Chinese Academy of Sciences*

ARS-P35.3 – UNSUPERVISED DOMAIN ADAPTION DICTIONARY LEARNING FOR VISUAL RECOGNITION
Zhun ZHONG, *China University of Petroleum*
Zongmin LI, *China University of Petroleum*
Runlin LI, *China University of Petroleum*
Xiaoxia SUN, *China University of Petroleum*

ARS-P35.4 – KERNEL SUBSPACE ALIGNMENT FOR UNSUPERVISED DOMAIN ADAPTATION
Mingwei XU, *School of Automation, Nanjing University of Posts and Telecommunications*
Songsong WU, *School of Automation, Nanjing University of Posts and Telecommunications*
Xiaoyuan JING, *School of Automation, Nanjing University of Posts and Telecommunications*
Jingyu YANG, *School of Computer Science and Technology, Nanjing University of Science and Technology*

★ **ARS-P35.5 –** CROSS-DOMAIN RECOGNITION BY IDENTIFYING COMPACT JOINT SUBSPACES
Yuewei LIN, *University of South Carolina*
Jing CHEN, *University of Macau*
Yu CAO, *IBM Research*
Youjie ZHOU, *University of South Carolina*
Lingfeng ZHANG, *University of Houston*
Song WANG, *University of South Carolina*

ARS-P35.6 – CONNECTING THE DOTS WITHOUT CLUES: UNSUPERVISED DOMAIN ADAPTATION FOR CROSS-DOMAIN VISUAL CLASSIFICATION
Wei-Yu CHEN, *National Taiwan University*
Tsu-Ming Harry HSU, *National Taiwan University*
Cheng-an HOU, *Academia Sinica*
Yi-Ren YEH, *Chinese Culture University*
Yu-Chiang Frank WANG, *Academia Sinica*

ARS-P44: Scene Analysis II

Tuesday, 16:30-18:30
POSTER
Room: **POSTER E**
Session Chair(s): Simone MILANI, *University of Padova*

ARS-P44.1 – OUTDOOR SCENE LABELLING WITH LEARNED FEATURES AND REGION CONSISTENCY ACTIVATION
Yandong LI, *University of Electronic Science and Technology of China*
Ferdous SOHEL, *The University of Western Australia*
Mohammed BENNAMOUN, *The University of Western Australia*
Hang LEI, *University of Electronic Science and Technology of China*

ARS-P44.2 – IMPROVING EGOCENTRIC VISION OF DAILY ACTIVITIES
Gonzalo VACA-CASTANO, *University of Central Florida*
Samarjit DAS, *Bosch Research and Technology Center*
Joao P SOUSA, *Bosch Research and Technology Center*

ARS-P44.3 – AN ITERATIVE CONVERGENCE ALGORITHM FOR SINGLE/MULTI GROUND PLANE DETECTION AND ANGLE ESTIMATION WITH RGB-D CAMERA
Yankun LANG, *Wakayama University*
Haiyuan WU, *Wakayama University*
Toshiyuki AMANO, *Wakayama University*
Qian CHEN, *Wakayama University*

ARS-P44.4 – DEPTH ESTIMATION BY ANALYZING INTENSITY DISTRIBUTION FOR LIGHT-FIELD CAMERAS
Yatong XU, *Shenzhen Key Lab of Broadband Network and Multimedia, Graduate School at Shenzhen, Tsinghua Univ*
Xin JIN, *Shenzhen Key Lab of Broadband Network and Multimedia, Graduate School at Shenzhen, Tsinghua Univ*
Qionghai DAI, *Automation Department, Tsinghua University*

ARS-P44.5 – COMBINING NONUNIFORM SAMPLING, HYBRID SUPER VECTOR AND RANDOM FOREST WITH DISCRIMINATIVE DECISION TREES FOR ACTION RECOGNITION
Kuanhong XU, *Samsung R&D Institute, China*
Ya LU, *Samsung R&D Institute, China*
Hongwei ZHANG, *Samsung R&D Institute, China*
Xuetao FENG, *Samsung R&D Institute, China*
Wonjun KIM, *Samsung Advanced Institute of Technology*
Jae-joon HAN, *Samsung Advanced Institute of Technology*

ARS-P44.6 – A SPATIAL CLASS LDA MODEL FOR CLASSIFICATION OF SPORTS SCENE IMAGES
Jin JEON, *KAIST*
Munchurl KIM, *KAIST*

ELI-O8: Document Analysis

Tuesday, 16:30-18:30
LECTURE
Room: **205A**

Session Chair(s): Xiao-Ping ZHANG, *Ryerson University*

16:30 **ELI-O8.1 –** CAPTURED OPEN BOOK IMAGE DE-WARPING USING DEPTH INFORMATION
Chyuan-Tyng WU, *Purdue University*
Kurt BENGTSON, *Hewlett Packard Company*
Jan ALLEBACH, *Purdue University*

16:50 **ELI-O8.2 –** SKEW CORRECTION AND LINE EXTRACTION IN BINARIZED PRINTED TEXT IMAGES
Wei LI, *Institute of Imaging and Computer Vision, RWTH Aachen University*
Matthias BREIER, *Institute of Imaging and Computer Vision, RWTH Aachen University*
Dorit MERHOF, *Institute of Imaging and Computer Vision, RWTH Aachen University*

17:10 **ELI-O8.3 –** GAMMA CORRECTION ACCELERATION FOR REAL-TIME TEXT EXTRACTION FROM COMPLEX COLORED IMAGES
Rostom KACHOURI, *Université Paris-Est, Laboratoire d informatique Gaspard-Monge, A3SI, ESIEE Paris, CNRS*
Christian MEDINA ARMAS, *Université Paris-Est, Laboratoire dinformatique Gaspard-Monge, A3SI, ESIEE Paris, CNRS, France*
Mohamed AKIL, *Université Paris-Est, Laboratoire dinformatique Gaspard-Monge, A3SI, ESIEE Paris, CNRS*

17:30 **ELI-O8.4 –** SCENE TEXT DETECTION USING SEQUENTIAL NONTEXT FILTERING
Yue LU, *East China Normal University*
Qingqing WANG, *East China Normal University*
Ying WEN, *East China Normal University*

17:50 **ELI-O8.5 –** FONT FINDER: VISUAL RECOGNITION OF TYPEFACE IN PRINTED DOCUMENTS
Tu BUI, *University of Surrey*
John COLLOMOSSE, *University of Surrey*

18:10 **ELI-O8.6 –** A LAYERED METHOD FOR DETERMINING MANGA TEXT BUBBLE READING ORDER
Samu KOVANEN, *Aalto University*
Kiyoharu AIZAWA, *The University of Tokyo*

SMR-P2: Image and Video Quality Assessment I

Tuesday, 16:30-18:30
POSTER
Room: **POSTER L**

Session Chair(s): Maria Aishy AMER, *Concordia University*

SMR-P2.1 – STUDYING HUMAN BEHAVIOURAL RESPONSES TO TIME-VARYING DISTORTIONS FOR VIDEO QUALITY ASSESSMENT
Juan V. TALENS-NOGUERA, *University of Hull*
Wei ZHANG, *University of Hull*
Hantao LIU, *University of Hull*

SMR-P2.2 – THE QUEST FOR THE INTEGRATION OF VISUAL SALIENCY MODELS IN OBJECTIVE IMAGE QUALITY ASSESSMENT: A DISTRACTION POWER COMPENSATED COMBINATION STRATEGY
Wei ZHANG, *University of Hull*
Juan V. TALENS-NOGUERA, *University of Hull*
Hantao LIU, *University of Hull*

★ **SMR-P2.3 –** NO-REFERENCE QUALITY ASSESSMENT OF CONTRAST-DISTORTED IMAGES BASED ON NATURAL SCENE STATISTICS
Yuming FANG, *Jiangxi University of Finance and Economics*
Kede MA, *University of Waterloo*

SMR-P2.4 – SIMULTANEOUS ESTIMATION OF IMAGE QUALITY AND DISTORTION VIA MULTI-TASK CONVOLUTIONAL NEURAL NETWORKS
Le KANG, *University of Maryland, College Park*
Peng YE, *SONY US Research Center*
Yi LI, *NICTA*
David DOERMANN, *University of Maryland, College Park*

SMR-P2.5 – COMPARISON OF SUBJECTIVE VIEWING TEST METHODS FOR IMAGE QUALITY ASSESSMENT
Tsung-Jung LIU, *National Chung Hsing University*
Kuan-Hsien LIU, *Academia Sinica*
Hsin-Hua LIU, *National Taiwan University*
Soo-Chang PEI, *National Taiwan University*

SMR-P3: Image and Video Quality Assessment II

Tuesday, 16:30-18:30
POSTER
Room: **POSTER M**

Session Chair(s): Maria Aishy AMER, *Concordia University*

SMR-P3.1 – ON THE IMPROVEMENT OF NO-REFERENCE MEAN OPINION SCORE ESTIMATION ACCURACY BY FOLLOWING A FRAME-LEVEL REGRESSION APPROACH
Katerina PANDREMMENOU, *University of Ioannina*
Muhammad SHAHID, *Blekinge Institute of Technology*
Lisimachos P. KONDI, *University of Ioannina*
Benny LOVSTROM, *Blekinge Institute of Technology*

SMR-P3.2 – NO-REFERENCE IMAGE QUALITY ASSESSMENT FOR REMOVAL OF PROCESSED ANDUNPROCESSED NOISE
Meisam RAKHSHANFAR, *Concordia University*
Maria Aishy AMER, *Concordia University*

SMR-P3.3 – DIFFERENCE OF GAUSSIAN STATISTICAL FEATURES BASED BLIND IMAGE QUALITY ASSESSMENT: A DEEP LEARNING APPROACH
Yaqi LV, *Ningbo University*
Gangyi JIANG, *Ningbo University*
Mei YU, *Ningbo University*
Haiyong XU, *Ningbo University*
Feng SHAO, *Ningbo University*
Shanshan LIU, *Ningbo University*

SMR-P3.4 – ASSESSING THE VISUAL EFFECT OF NON-PERIODIC TEMPORAL VARIATION OF QUANTIZATION STEPSIZE IN COMPRESSED VIDEO
Zhili GUO, *Polytechnic School of Engineering, New York University*
Yao WANG, *Polytechnic School of Engineering, New York University*

SMR-P3.5 – A STUDY OF SUBJECTIVE VIDEO QUALITY AT VARIOUS FRAME RATES
Alex MACKIN, *University of Bristol*
Fan ZHANG, *University of Bristol*
David BULL, *University of Bristol*

SMR-P3.6 – IMAGE QUALITY ASSESSMENT BASED ON DCT SUBBAND SIMILARITY
Amnon BALANOV, *Technion - Israel Institute of Technology*
Arik SCHWARTZ, *Technion - Israel Institute of Technology*
Yair MOSHE, *Technion - Israel Institute of Technology*
Nimrod PELEG, *Technion - Israel Institute of Technology*

SMR-P11: Image and Video Quality Assessment III

Tuesday, 16:30-18:30
POSTER
Room: **POSTER N**

Session Chair(s): Maria Aishy AMER, *Concordia University*

SMR-P11.1 – SUBJECTIVE AND OBJECTIVE EVALUATION OF IMAGE INPAINTING QUALITY
Philipp TIEFENBACHER, *Technische Universität München*
Viktor BOGISCHEF, *Technische Universität München*
Daniel MERGET, *Technische Universität München*
Gerhard RIGOLL, *Technische Universität München*

SMR-P11.2 – IMAGE QUALITY EVALUATION USING IMAGE QUALITY RULER AND GRAPHICAL MODEL
Weibao WANG, *Purdue University*
Yandong GUO, *Microsoft Research*
Jan ALLEBACH, *Purdue University*

SMR-P11.3 – 3D PERCEPTION BASED QUALITY POOLING ON STEREOSCOPIC IMAGE
Haksub KIM, *Yonsei University*
Junghwan KIM, *Yonsei University*
Sanghoon LEE, *Yonsei University*

SMR-P11.4 – REDUCED-REFERENCE QUALITY ASSESSMENT BASED ON THE ENTROPY OF DNTCOEFFICIENTS OF LOCALLY WEIGHTED GRADIENTS
S. Alireza GOLESTANEH, *Arizona State University*
Lina J. KARAM, *Arizona State University*

SMR-P11.5 – SALIENCY WEIGHTED QUALITY ASSESSMENT OF TONE-MAPPED IMAGES
Hamid NASRINPOUR, *University of Manitoba*
Neil BRUCE, *University of Manitoba*

★ **SMR-P11.6 –** FULL-REFERENCE VISUAL QUALITY ASSESSMENT FOR SYNTHETIC IMAGES: A SUBJECTIVE STUDY
Debarati KUNDU, *University of Texas at Austin*
Brian EVANS, *University of Texas at Austin*

SMR-P4: Image Quality Assessment

Tuesday, 16:30-18:30
POSTER
Room: **POSTER 0**

Session Chair(s): Ghassan ALREGIB, *Georgia Institute of Technology*

SMR-P4.1 – QUALITY PREDICTION OF ASYMMETRICALLY COMPRESSED STEREOSCOPIC VIDEOS
Jiheng WANG, *University of Waterloo*
Shiqi WANG, *University of Waterloo*
Zhou WANG, *University of Waterloo*

SMR-P4.2 – REDUCED-REFERENCE PERCEPTUAL QUALITY ASSESSMENT FOR VIDEO STREAMING
Mohammed AABED, *Georgia Institute of Technology*
Ghassan ALREGIB, *Georgia Institute of Technology*

★ **SMR-P4.3 –** A HIGHLY EFFICIENT METHOD FOR BLIND IMAGE QUALITY ASSESSMENT
Qingbo WU, *University of Electronic Science and Technology of China*
Zhou WANG, *University of Waterloo*
Hongliang LI, *University of Electronic Science and Technology of China*

SMR-P4.4 – PERSIM: MULTI-RESOLUTION IMAGE QUALITY ASSESSMENT IN THE PERCEPTUALLYUNIFORM COLOR DOMAIN
Dogancan TEMEL, *Georgia Institute of Technology*
Ghassan ALREGIB, *Georgia Institute of Technology*

SMR-P4.5 – LIMITATIONS OF THE SSIM QUALITY METRIC IN THE CONTEXT OF DIAGNOSTIC IMAGING
Jean-francois PAMBRUN, *École de technologie supérieure*
Rita NOUMEIR, *École de technologie supérieure*

SMR-P4.6 – PERCEPTUAL QUALITY ASSESSMENT OF DENOISED IMAGES
Kai ZENG, *University of Waterloo*
Zhou WANG, *University of Waterloo*

SNT-S6: Show & Tell VI

Tuesday, 16:30-18:30
SHOW & TELL
Room: **SHOW & TELL**

Session Chair(s): Fabrice LABEAU, *McGill University*

SNT-S6.1 – DEFORMABLE MODELS FOR THE CONSTRUCTION OF 3D USER-INTERACTIVE SEGMENTATION ALGORITHMS
Daniel SCHMITTER, *Biomedical Imaging Group, EPFL*
Christophe GAUDET-BLAVIGNAC, *Biomedical Imaging Group, EPFL*
Davide PICCINI, *Advanced Clinical Imaging Technology Group, Siemens Healthcare Sector*
Michael UNSER, *Biomedical Imaging Group, EPFL*

In this demo, we will show our work in facial expression recognition. The demo will be accepting an image with possibly multiple persons, it will detect the several faces and will output for each face confidence values for a set of pre-trained facial expressions, namely: surprise, fear, disgust, happiness, sadness and anger.

SNT-S6.2 – FACIAL VIDEO SUPER RESOLUTION USING SEMANTIC EXEMPLAR COMPONENTS
Xu CHEN, *Sharp Labs of America*
In this demo, we are going to present a side by side comparison of video super resolution results using our method and the state-of-the-art approach. The upscaling factor is selected to be 4. The video is captured from YouTube and TV broadcast streaming.

SNT-S6.3 – ROBUST ANOMALY DETECTION FOR VISION-BASED INSPECTION OF RAILWAY COMPONENTS
Xavier GIBERT, *University of Maryland*
We will demonstrate our developed library of tools and algorithms that will be used to inspect railway tracks with machine vision technology. This technology has been integrated into a distributed computing framework and a user-friendly review package with a client-server interface.

SNT-S6.4 – STATISTICAL IMAGE RECONSTRUCTION FOR SYMMETRIC VIRUS PARTICLES
Nan XU, *Cornell University*
Peter DOERSCHUK, *Cornell University*
Cryo electron microscopy leads to 3-D image reconstruction problems. This demonstration describes methods for incorporating the symmetry into expectation-maximization algorithms for the maximum likelihood solution of the reconstruction problem. The demonstration will use sophisticated 3-D computer graphics to allow participants to understand the goals and achievements of the 3-D reconstruction algorithms described in the paper

SS2-O1: Image/Video Indexing and Retrieval for Healthcare

Tuesday, 16:30-18:30
LECTURE Room: **202**
Session Chair(s): Alexia BRIASSOULI, Centre for Research and Technology Hellas
Jenny BENOIS-PINEAU, *LaBRI*

16:30 SS2-O1.1 – COMPUTATIONALLY EFFICIENT RECOGNITION OF ACTIVITIES OF DAILY LIVING
Stergios POULARAKIS, *Information and Technologies Institute - Centre for Research and Technology Hellas*
Konstantinos AVGERINAKIS, *Information and Technologies Institute - Centre for Research and Technology Hellas*
Alexia BRIASSOULI, *Information and Technologies Institute - Centre for Research and Technology Hellas*
Ioannis KOMPATSIARIS, *Information and Technologies Institute - Centre for Research and Technology Hellas*

16:50 SS2-O1.2 – FEATURE SALIENCY ANALYSIS FOR PERCEPTUAL SIMILARITY OF CLUSTERED MICROCALCIFICATIONS
Juan WANG, *Illinois Institute of Technology*
Yongyi YANG, *Illinois Institute of Technology*

17:10 ★ **SS2-O1.3 –** BARCODE ANNOTATIONS FOR MEDICAL IMAGE RETRIEVAL: A PRELIMINARY INVESTIGATION
Hamid R. TIZHOOSH, *University of Waterloo*

17:30 ★ **SS2-O1.4 –** OBJECT RECOGNITION WITH TOP-DOWN VISUAL ATTENTION MODELING FOR BEHAVIORAL STUDIES
Vincent BUSO, *Laboratoire Bordelais de Recherches en Informatique*
Jenny BENOIS-PINEAU, *Laboratoire Bordelais de Recherches en Informatique*
Ivan GONZALEZ -DIAZ, *Universidad Carlos III de Madrid*

17:50 **SS2-O1.5 –** IDENTIFYING EPILEPTIC SEIZURES BASED ON A TEMPLATE-BASED EYEBALL DETECTION TECHNIQUE
Supriya SATHYANARAYANA, *Nanyang Technological University*
Ravi Kumar SATZODA, *TUM CREATE*
Suchitra SATHYANARAYANA, *Nanyang Technological University*
Srikanthan THAMBIPILLAI, *Nanyang Technological University*

TEC-O1: Compressed Sensing

Tuesday, 16:30-18:30
LECTURE
Room: **204B**
Session Chair(s): Jie LIANG, *Simon Fraser University*

16:30 **TEC-O1.1 –** RECONSTRUCTION OF COMPRESSIVELY SAMPLED LIGHT FIELDS USING A WEIGHTED 4D-DCT BASIS
Yusuke MIYAGI, *Graduate School of Engineering, Nagoya University*
Keita TAKAHASHI, *Graduate School of Engineering, Nagoya University*
Mehrdad PANAHPOUR TEHRANI, *Graduate School of Engineering, Nagoya University*
Toshiaki FUJII, *Graduate School of Engineering, Nagoya University*

16:50 **TEC-O1.2 –** NONCONVEX RECONSTRUCTION FOR LOW-DIMENSIONAL FLUORESCENCE MOLECULAR TOMOGRAPHIC POISSON OBSERVATIONS
Lasith ADHIKARI, *University of California, Merced*
Dianwen ZHU, *University of California, Merced*
Changqing LI, *University of California, Merced*
Roummel MARCIA, *University of California, Merced*

17:10 ★ **TEC-O1.3 –** BM3D-AMP: A NEW IMAGE RECOVERY ALGORITHM BASED ON BM3D DENOISING
Christopher METZLER, *Rice University*
Arian MALEKI, *Columbia University*
Richard BARANIUK, *Rice University*

17:30 **TEC-O1.4 –** IMAGE SUPER-RESOLUTION FROM COMPRESSED SENSING OBSERVATIONS
Wael SAAFIN, *University of Granada*
Miguel VEGA, *University of Granada*
Rafael MOLINA, *University of Granada*
Aggelos K. KATSAGGELOS, *Northwestern University*

17:50 **TEC-O1.5 –** LOCAL SENSING WITH GLOBAL RECOVERY
Dung TRAN, *Johns Hopkins University*
Duyet TRAN, *Hanoi University of Science and Technology*
Sang CHIN, *Boston University*
Trac TRAN, *Johns Hopkins University*

18:10 **TEC-O1.6 –** MULTI-RESOLUTION COMPRESSED SENSING RECONSTRUCTION VIA APPROXIMATEMESSAGE PASSING
Xing WANG, *Simon Fraser University*
Jie LIANG, *Simon Fraser University*

TEC-O2: Image Denoising

Tuesday, 16:30-18:30
LECTURE
Room: **204A**
Session Chair(s): Masayuki TANAKA, *Tokyo Institute of Technology*

16:30 **TEC-O2.1 –** IMAGE DENOISING USING OPTIMALLY WEIGHTED BILATERAL FILTERS: A SURE AND FAST APPROACH
Kunal CHAUDHURY, *Indian Institute of Science*
Kollipara RITHWIK, *Indian Institute of Technology, Hyberadbad*

16:50 **TEC-O2.2 –** DA3D: FAST AND DATA ADAPTIVE DUAL DOMAIN DENOISING
Nicola PIERAZZO, *ENS Cachan*
Martin RAIS, *ENS Cachan*
Jean-michel MOREL, *ENS Cachan*
Gabriele FACCIOLO, *ENS Cachan*

17:10 **TEC-O2.3 –** IMAGE DENOISING IN MULTIPLICATIVE NOISE
Chandra Sekhar SEELAMANTULA, *Indian Institute of Science*
Thierry BLU, *The Chinese University of Hong Kong*

17:30 **TEC-O2.4 –** ROTATION INVARIANT SIMILARITY MEASURE FOR NON-LOCAL SELF-SIMILARITY BASED IMAGE DENOISING
Chenglin ZUO, *Ghent University & National University of Defense Technology*
Ljubomir JOVANOV, *Ghent University*
Hiep LUONG, *Ghent University*
Bart GOOSSENS, *Ghent University*
Wilfried PHILIPS, *Ghent University*
Yu LIU, *National University of Defense Technology*
Maojun ZHANG, *National University of Defense Technology*

17:50 **TEC-O2.5 –** ROBUST CONTRAST ENHANCEMENT OF NOISY LOW-LIGHT IMAGES: DENOISING-ENHANCEMENT-COMPLETION
Jaemoon LIM, *Korea University*
Jin-Hwan KIM, *Korea University*
Jae-Young SIM, *Ulsan National Institute of Science and Technology*
Chang-Su KIM, *Korea University*

18:10 **TEC-O2.6 –** PSEUDO FOUR-CHANNEL IMAGE DENOISING FOR NOISY CFA RAW DATA
Hiroki AKIYAMA, *Tokyo Institute of Technology*
Masayuki TANAKA, *Tokyo Institute of Technology*
Masatoshi OKUTOMI, *Tokyo Institute of Technology*

TEC-P20: Neurological Feature Extraction and Classification

Tuesday, 16:30-18:30
POSTER Room: **POSTER H**
Session Chair(s): Guy COURBEBAISSE, *University of Lyon, CREATIS*

TEC-P20.1 – ASYMMETRY EVALUATION OF FUNDUS IMAGES IN RIGHT AND LEFT EYES USING RADON TRANSFORM AND FRACTAL ANALYSIS
Tahereh MAHMUDI, *Isfahan Univ. of Med. Sciences*
Rahele KAFIEH, *Isfahan Univ. of Med. Sciences*
Hossein RABBANI, *Isfahan Univ. of Med. Sciences*
Alireza MEHRI, *Isfahan Univ. of Med. Sciences*
Mohammadreza AKHLAG, *Isfahan Univ. of Med. Sciences*

TEC-P20.2 – SENSORY LOAD HIERARCHY-BASED CLASSIFICATION OF SCHIZOPHRENIA PATIENTS
Mustafa S. ÇETIN, *University of New Mexico*
Julia M. STEPHEN, *The Mind Research Network*
Vince D. CALHOUN, *University of New Mexico*

TEC-P20.3 – REGION-BASED BRAIN SELECTION AND CLASSIFICATION ON PET IMAGES FOR ALZHEIMERS DISEASE COMPUTER AIDED DIAGNOSIS
Imène GARALI, *Institut FRESNEL UMR-CNRS 7249, Campus Universitaire de Saint Jérôme*
Mouloud ADEL, *Institut FRESNEL UMR-CNRS 7249, Campus Universitaire de Saint Jérôme*
Salah BOURENNANE, *Institut FRESNEL UMR-CNRS 7249, Campus Universitaire de Saint Jérôme*
Eric GUEDJ, *Centre Européen de Recherche en Imagerie Médicale, Faculté de Médecine, Marseille Aix-Marseille*

TEC-P20.4 – SUBJECT-CENTERED MULTI-VIEW FEATURE FUSION FOR NEUROIMAGING RETRIEVAL AND CLASSIFICATION
Sidong LIU, *Harvard Medical School*
Weidong CAI, *Harvard Medical School*
Siqi LIU, *The University of Sydney*
Sonia PUJOL, *Harvard Medical School*
Ron KIKINIS, *Harvard Medical School*
Dagan FENG, *The University of Sydney*

TEC-P20.5 – CLASSIFICATION OF EEG SIGNALS FOR DETECTION OF EPILEPTIC SEIZURE ACTIVITIES BASED ON LBP DESCRIPTOR OF TIME-FREQUENCY IMAGES
Larbi BOUBCHIR, *University of Paris 8*
Somaya AL-MAADEED, *Qatar University*
Ahmed BOURIDANE, *Northumbria University*
Arab ALI CHERIF, *University of Paris 8, France*

TEC-P20.6 – ULTRASOUND MEDIAN NERVE LOCALIZATION BY CLASSIFICATION BASED ON DESPECKLE FILTERING AND FEATURE SELECTION
Oussama HADJERCI, *INSA Centre Val de Loire, Université d'Orléans, Laboratoire PRISME EA 4229*
Adel HAFIANE, *INSA Centre Val de Loire, Laboratoire PRISME EA 4229*
Donatello CONTE, *Université de Francois Rabelais, Laboratoire LI EA 6300*
Pascal MAKRIS, *Université de Francois Rabelais, Laboratoire LI EA 6300*
Pierre VIEYRES, *Université d'Orléans, Laboratoire PRISME EA 4229*
Alain DELBOS, *Clinique Medipole Garonne CS 13624*

TEC-P23: Single-image Superresolution

Tuesday, 16:30-18:30
POSTER
Room: **POSTER F**

Session Chair(s): Pier Luigi DRAGOTTI, *Imperial College*

★ **TEC-P23.1 –** FAST IMAGE SUPER-RESOLUTION VIA SELECTIVE MANIFOLD LEARNING OFHIGH-RESOLUTION PATCHES
Chinh DANG, *Michigan State University*
Hayder RADHA, *Michigan State University*

TEC-P23.2 – INCORPORATING IMAGE DEGENERATION MODELING WITH MULTITASK LEARNING FOR IMAGE SUPER-RESOLUTION
Yudong LIANG, *Xi'an Jiaotong University*
Jinjun WANG, *Xi'an Jiaotong University*
Shizhou ZHANG, *Xi'an Jiaotong University*
Yihong GONG, *Xi'an Jiaotong University*

TEC-P23.3 – ADAPTIVE AUTOREGRESSIVE MODEL WITH WINDOW EXTENSION VIA EXPLICIT GEOMETRY FOR IMAGE INTERPOLATION
Qingyun WANG, *Institute of Computer Science and Technology,Peking University*
Jiaying LIU, *Institute of Computer Science and Technology,Peking University*
Wenhan YANG, *Institute of Computer Science and Technology,Peking University*
Zongming GUO, *Institute of Computer Science and Technology,Peking University*

TEC-P23.4 – ROBUST INTERNAL EXEMPLAR-BASED IMAGE ENHANCEMENT
Yang XIAN, *The Graduate Center, The City University of New York*
Yingli TIAN, *The City College and The Graduate Center, The City University of New York*

TEC-P23.5 – FAST SINGLE-IMAGE UPSAMPLING WITH RELATIVE EDGE GROWTH RATE PRIORS
Chang SU, *Samsung Research America*
Li TAO, *Samsung Research America*

TEC-P23.6 – SAMPLING PIECEWISE SMOOTH SIGNALS AND ITS APPLICATION TO IMAGE UP-SAMPLING
Xiaoyao WEI, *Imperial College London*
Pier Luigi DRAGOTTI, *Imperial College London*

TEC-P27: Visual Signal Analysis

Tuesday, 16:30-18:30
POSTER
Room: **POSTER J**

Session Chair(s): Stanley CHAN, *Purdue University*

TEC-P27.1 – FAST SPATIALLY VARYING OBJECT MOTION BLUR ESTIMATION
Yi ZHANG, *University of Dayton*
Keigo HIRAKAWA, *University of Dayton*

TEC-P27.2 – VESSEL REGION DETECTION IN CORONARY X-RAY ANGIOGRAMS
Hamidreza FAZLALI, *Isfahan University of Technology*
Nader KARIMI, *Isfahan University of Technology*
S.M.Reza SOROUSHMEHR, *University of Michigan, Ann Arbor*
Shashank SINHA, *University of Michigan, Ann Arbor*
Shadrokh SAMAVI, *Isfahan University of Technology*
Brahmajee NALLAMOTHU, *University of Michigan, Ann Arbor*
Kayvan NAJARIAN, *University of Michigan, Ann Arbor*

TEC-P27.3 – UNDERSTANDING SYMMETRIC SMOOTHING FILTERS VIA GAUSSIAN MIXTURES
Stanley CHAN, *Purdue University*
Todd ZICKLER, *Harvard University*
Yue LU, *Harvard University*

TEC-P27.4 – A FUZZY APPROACH TO REAL-TIME DIGITAL COLOR REPRODUCTION OF CLOTHING WITH 3D CAMERA
Finn WONG, *Intel Corporation*
Donghai DAI, *Intel Corporation*

TEC-P27.5 – MULTI-OBJECTIVE OPTIMIZATION BASED ON PARAMETER TUNING OF CLAHE TO ACHIEVE DIFFERENT CONTRAST LEVELS IN MEDICAL IMAGES
Luis G. MORÉ, *Facultad Politécnica - Universidad Nacional de Asunción*
José Luis VÁZQUEZ NOGUERA, *Facultad Politécnica - Universidad Nacional de Asunción*
Diego PINTO-ROA, *Facultad Politécnica - Universidad Nacional de Asunción*
Marcos BRIZUELA, *Facultad Politécnica - Universidad Nacional de Asunción*
Horacio LEGAL AYALA, *Facultad Politécnica - Universidad Nacional de Asunción*

TEC-P27.6 – SDM-BSM: A FUSING DEPTH SCHEME FOR HUMAN ACTION RECOGNITION
Hong LIU, *Shenzhen Graduate School, Peking University*
Lu TIAN, *Shenzhen Graduate School, Peking University*
Mengyuan LIU, *Shenzhen Graduate School, Peking University*
Hao TANG, *Shenzhen Graduate School, Peking University*

TEC-P3: Computer-assisted Screening and Diagnosis

Tuesday, 16:30-18:30
POSTER
Room: **POSTER K**

Session Chair(s): Seong Tae KIM, *KAIST*

TEC-P3.1 – REGION MATCHING BASED ON LOCAL STRUCTURE INFORMATION IN IPSILATERAL DIGITAL BREAST TOMOSYNTHESIS VIEWS
Seong Tae KIM, *KAIST*
Dae Hoe KIM, *KAIST*
Dong Jin JI, *KAIST*
Yong Man RO, *KAIST*

TEC-P3.2 – PREDICTION OF FACIAL SOFT TISSUE DEFORMATIONS WITH IMPROVED RUBIN-BODNER MODEL AFTER CRANIOMAXILLOFACIAL (CMF) SURGERY
Guangming ZHANG, *Wake Forest University School of Medicine*
James J XIA, *The Methodist Hospital Research Institute*
Xiaoyan ZHANG, *The Methodist Hospital Research Institute*
Xiaobo ZHOU, *Wake Forest University School of Medicine*

TEC-P3.3 – FEATURES-BASED APPROACH FOR ALZHEIMER'S DISEASE DIAGNOSIS USING VISUAL PATTERN OF WATER DIFFUSION IN TENSOR DIFFUSION IMAGING
Olfa BEN AHMED, *University Of Bordeaux*
Jenny BENOIS-PINEAU, *Laboratoire Bordelais de Recherches en Informatique (LaBRI)*
Chokri BEN AMAR, *University of Sfax*
Michelle ALLARD, *University of Bordeaux*
Gwenaelle CATHELINE, *University of Bordeaux*

TEC-P3.4 – MODEL-BASED (PASSIVE) HEART RATE ESTIMATION USING REMOTE VIDEO RECORDING OF MOVING HUMAN SUBJECTS ILLUMINATED BY AMBIENT LIGHT
Jacob GUNTHER, *Utah State University*
Nathan RUBEN, *Utah State University*
Todd MOON, *Utah State University*

TEC-P3.5 – COMPUTER AIDED ENDOSCOPE DIAGNOSIS VIA WEAKLY LABELED DATA MINING
Shuai WANG, *State Key Laboratory of Robotics, Shenyang Institute of Automation, Chinese Academy of Sciences*
Yang CONG, *State Key Laboratory of Robotics, Shenyang Institute of Automation, Chinese Academy of Sciences*
Huijie FAN, *State Key Laboratory of Robotics, Shenyang Institute of Automation, Chinese Academy of Sciences*
Yunsheng YANG, *Chinese PLA General Hospital*
Yandong TANG, *State Key Laboratory of Robotics, Shenyang Institute of Automation, Chinese Academy of Sciences*
Huaici ZHAO, *State Key Laboratory of Robotics, Shenyang Institute of Automation, Chinese Academy of Sciences*

TEC-P5: Energy- and Graph-based Approaches

Tuesday, 16:30-18:30
POSTER
Room: **POSTER G**

Session Chair(s): Kenneth ROSE, *University of California, Santa Barbara*

TEC-P5.1 – SEGMENTATION OF CELLS IN ELECTRON MICROSCOPY IMAGES THROUGH MULTIMODAL LABEL TRANSFER
Renuka SHENOY, *University of California, Santa Barbara*
Min-chi SHIH, *University of California, Santa Barbara*
Kenneth ROSE, *University of California, Santa Barbara*

TEC-P5.2 – DYNAMIC BI-MODAL FUSION OF IMAGES FOR THE SEGMENTATION OF POLLEN TUBES IN VIDEO
Asongu TAMBO, *University of California Riverside*
Bir BHANU, *University of California Riverside*

★ **TEC-P5.3 –** COST AGGREGATION TABLE: A THEORETIC DERIVATION ON THE MARKOV RANDOM FIELD AND ITS RELATION TO MESSAGE PASSING
Jeongmok HA, *Pohang University of Science and Technology (POSTECH)*
Byeongchan JEON, *Pohang University of Science and Technology (POSTECH)*
Sung Yong JO, *Pohang University of Science and Technology (POSTECH)*
Jeayoung JEON, *Pohang University of Science and Technology (POSTECH)*
Hong JEONG, *Pohang University of Science and Technology (POSTECH)*

★ **TEC-P5.4 –** AUTOMATIC SEGMENTATION OF NATURAL IMAGES WITH ANISOTROPIC FAST MARCHING ALGORITHM AND GEODESIC VOTING
Vijaya Kumar GHORPADE, *Institut Pascal, CEREMADE*
Laurent COHEN, *University Paris Dauphine, CEREMADE*

TEC-P5.5 – SEGMENTATION OF LIVER TUMOR VIA NONLOCAL ACTIVE CONTOURS
Bin CHEN, *Southeast University*
Yang CHEN, *Southeast University*
Guanyu YANG, *Southeast University*
Jingyu MENG, *Southeast University*
Rui ZENG, *Southeast University*
Limin LUO, *Southeast University*

TEC-P5.6 – SEGMENTATION OF INFANT BRAIN MR IMAGES BASED ON ADAPTIVE SHAPE PRIOR AND HIGHER-ORDER MGRF
Marwa ISMAIL, *University of Louisville*
Mahmoud MOSTAPHA, *University of Louisville*
Ahmed SOLIMAN, *University of Louisville*
Matt NITZKEN, *University of Louisville*
Fahmi KHALIFA, *University of Louisville*
Ahmed ELNAKIB, *University of Louisville*
Georgy GIMEL'FARB, *University of Auckland*
Manuel CASANOVA, *University of Louisville*
Ayman EL-BAZ, *University of Louisville*

YPE-E: SPS Young Professionals and Practicing Engineers Networking Event

Tuesday, 17:00-19:00
Room: **NATIONAL ASSEMBLY LIBRARY**

SOCIAL EVENT

Session Chair(s): Mahsa POURAZAD, *TELUS*
Paul FORTIER, *Laval University*

PLE-N3: Plenary – Challenges and Opportunities in Biological Imaging

Wednesday, 09:00-10:00
Room: **200AB**

PLENARY

Session Chair(s): Stéphane COULOMBE, *École de technologie supérieure*
Kenneth ROSE, *University of California*

Presenter

Michael Unser, *Professor, EPFL Biomedical Imaging Group*

Summary

While the major achievements in medical imaging can be traced back to the end the 20th century, there are strong indicators that we have recently entered the golden age of cellular/ biological imaging. The enabling modality is fluorescence microscopy which results from the combination of highly specific fluorescent probes (Nobel Prize 2008) and sophisticated optical instrumentation (Nobel Prize 2014). Modern microscopy centers are providing biologists with unprecedented amounts of data in 3D + time.

To address the computational aspects, two nascent fields have emerged in which image processing is expected to play a significant role. The first is "digital optics" where the idea is to combine optics with advanced signal processing in order to increase spatial resolution while reducing acquisition time. The second area is "bioimage informatics" which is concerned with the development of image analysis software to make microscopy more quantitative. The key issue here is reliable image segmentation as well as the ability to track structures of interest over time. We shall discuss specific examples and describe state-of-the-art solutions for bioimage reconstruction and analysis. This will help us build a list of challenges and opportunities to guide further research in bioimaging.

ARS-O8: Image Segmentation III

Wednesday, 10:30-12:30
Room: **205A**

LECTURE

Session Chair(s): Christian DESROSIERS, *École de technologie supérieure*

10:30 ARS-O8-4 – USER INTERACTIVE SEGMENTATION WITH PARTIALLY GROWING RANDOM FOREST
Jongwon CHOI, *Seoul National University, ASRI*
Jin Young CHOI, *Seoul National University, ASRI*

10:50 ★ ARS-O8.2 – A NEW MUMFORD-SHAH TYPE MODEL INVOLVING A SMOOTHING OPERATOR FOR MULTIPHASE IMAGE SEGMENTATION
Ying GU, *Institute for Infocomm Research*
Wei XIONG, *Institute for Infocomm Research*
Li-lian WANG, *Nanyang Technological University*
Jierong CHENG, *Institute for Infocomm Research*
Jia DU, *Institute for Infocomm Research*
Wenyu CHEN, *Institute for Infocomm Research*
Yue WANG, *Institute for Infocomm Research*
Shue Ching CHIA, *Institute for Infocomm Research*

11:10 **ARS-O8.3 –** FIXATION POINT-BASED IMAGE SEGMENTATION USING RANDOM WALK MODEL
Cheolkon JUNG, *Xidian University*
Xiao TIAN, *Xidian University*

11:30 **ARS-O8-1 –** NANO-SCALE CONTEXT-SENSITIVE SEMANTIC SEGMENTATION
Nan ZHAO, *Florida State University*
Xiuwen LIU, *Florida State University*

11:50 **ARS-O8.5 –** A SPARSE CODING METHOD FOR SEMI-SUPERVISED SEGMENTATION WITH MULTI-CLASS HISTOGRAM CONSTRAINTS
Stefan KARNYACZKI, *École de technologie supérieure*
Christian DESROSIERS, *École de technologie supérieure*

12:10 **ARS-O8.6 –** UNSUPERVISED HIERARCHICAL IMAGE SEGMENTATION BASED ON BAYESIAN SEQUENTIAL PARTITIONING
Hao-Wei YEH, *Department of Electronics Engineering, National Chiao Tung University, Taiwan*
Chen-Yu TSENG, *Department of Electronics Engineering, National Chiao Tung University, Taiwan*
Tung-Yu WU, *Institute for Computational and Mathematical Engineering, Stanford University*
Sheng-Jyh WANG, *Department of Electronics Engineering, National Chiao Tung University*

ARS-P1: Action Detection and Recognition I

Wednesday, 10:30-12:30
POSTER
Room: **POSTER A**

Session Chair(s): Anastasios TEFAS, *Aristotle University of Thessaloniki*

★ **ARS-P1.1 –** ACTION RECOGNITION WITH APPROXIMATE SPARSE CODING
Yu WANG, *Nagoya University*
Jien KATO, *Nagoya University*

ARS-P1.2 – MULTI-VIEW DESCRIPTOR MINING VIA CODEWORD NET FOR ACTION RECOGNITION
Jingyu LIU, *National Laboratory of Pattern Recognition, Institute of Automation Chinese Academy of Sciences*
Yongzhen HUANG, *National Laboratory of Pattern Recognition, Institute of Automation Chinese Academy of Sciences*
Xiaojiang PENG, *Hengyang Normal University*
Liang WANG, *National Laboratory of Pattern Recognition, Institute of Automation Chinese Academy of Sciences*

ARS-P1.3 – TRAFFIC ACCIDENT DETECTION THROUGH A HYDRODYNAMIC LENS
Habib ULLAH, *University of Trento*
Mohib ULLAH, *University of Trento*
Hina AFRIDI, *University of Trento*
Nicola CONCI, *University of Trento*
Francesco G.B. DE NATALE, *University of Trento*

ARS-P1.4 – JOINT CLASSIFICATION OF ACTIONS WITH MATRIX COMPLETION
Sushma BOMMA, *Heriot-Watt University*
Neil ROBERTSON, *Heriot-Watt University*

ARS-P1.5 – MULTI-LEVEL ACTION DETECTION VIA LEARNING LATENT STRUCTURE
Behzad BOZORGTABAR, *University of Canberra*
Roland GOECKE, *University of Canberra*

ARS-P1.6 – 3-D SKELETON JOINTS-BASED ACTION RECOGNITION USING COVARIANCEDESCRIPTORS ON DISCRETE SPHERICAL HARMONICS TRANSFORM
Adnan AL ALWANI, *GREYC CNRS (UMR 6072), University of Caen Basse-Normandie*
Youssef CHAHIR, *GREYC CNRS (UMR 6072), University of Caen Basse-Normandie*

ARS-P47: Action Detection and Recognition II

Wednesday, 10:30-12:30
POSTER
Room: **POSTER B**

Session Chair(s): Anastasios TEFAS, *Aristotle University of Thessaloniki*

ARS-P47.1 – ACTIVE IMAGE PAIR SELECTION FOR CONTINUOUS PERSON RE-IDENTIFICATION
Abir DAS, *University of California, Riverside*
Rameswar PANDA, *University of California, Riverside*
Amit ROY-CHOWDHURY, *University of California, Riverside*

ARS-P47.2 – MERGING LINEAR DISCRIMINANT ANALYSIS WITH BAG OF WORDS MODEL FOR HUMAN ACTION RECOGNITION
Alexandros IOSIFIDIS, *Aristotle University of Thessaloniki*
Anastasios TEFAS, *Aristotle University of Thessaloniki*
Ioannis PITAS, *Aristotle University of Thessaloniki*

ARS-P47.3 – DEEP CCA BASED SUPER VECTOR FOR ACTION RECOGNITION
Dongqi CAI, *Beijing University of Posts and Telecommunications*
Fei SU, *Beijing University of Posts and Telecommunications*

ARS-P47.4 – SPATIO-TEMPORAL PYRAMID CUBOID MATCHING FOR ACTION RECOGNITION USING DEPTH MAPS
Bin LIANG, *Charles Sturt University*
Lihong ZHENG, *Charles Sturt University*

ARS-P47.5 – LOCAL MEAN SPATIO-TEMPORAL FEATURE FOR DEPTH IMAGE-BASED SPEED-UP ACTION RECOGNITION
Xiaopeng JI, *Shenzhen Institutes of Advanced Technology, CAS*
Jun CHENG, *Shenzhen Institutes of Advanced Technology, CAS*
Dapeng TAO, *Shenzhen Institutes of Advanced Technology, CAS*

ARS-P47.6 – ACTION RECOGNITION USING JOINT COORDINATES OF 3D SKELETON DATA
Tamal BATABYAL, *University of Virginia*
Tanushyam CHATTOPADHYAY, *TCS*
Dipti Prasad MUKHERJEE, *Indian Statistical Institute*

ARS-P52: Activity and Face Recognition

Wednesday, 10:30-12:30
POSTER
Room: **POSTER C**

Session Chair(s): Rolf Hugh BAXTER, *Heriot-Watt University*

ARS-P52.1 – ADAPTIVE APPEARANCE LEARNING FOR HUMAN POSE ESTIMATION
Lei WANG, *Shanghai Jiao Tong University*
Xu ZHAO, *Shanghai Jiao Tong University*
Yuncai LIU, *Shanghai Jiao Tong University*

ARS-P52.2 – BOOSTED HUMAN HEAD POSE ESTIMATION USING KINECT CAMERA
Anwar SAEED, *Institute for Information Technology and Communications (IIKT)*
Ayoub AL-HAMADI, *Institute for Information Technology and Communications (IIKT)*

ARS-P52.3 – INSTANTANEOUS REAL-TIME HEAD POSE AT A DISTANCE
Sankha Subhra MUKHERJEE, *Heriot-Watt University*
Rolf Hugh BAXTER, *Heriot-Watt University*
Neil ROBERTSON, *Heriot-Watt University*

★ **ARS-P52.4 –** ACCURATE HUMAN POSE ESTIMATION BY AGGREGATING MULTIPLE POSE HYPOTHESES USING MODIFIED KERNEL DENSITY APPROXIMATION
Eunji CHO, *Pohang University of Science and Technology*
Yeonho KIM, *Pohang University of Science and Technology*
Daijin KIM, *Pohang University of Science and Technology*

ARS-P52.5 – CROSS-MODALITY POSE-INVARIANT FACIAL EXPRESSION
Jordan HASHEMI, *Duke University*
Qiang QIU, *Duke University*
Guillermo SAPIRO, *Duke University*

COM-P4: Media Analysis and Understanding

Wednesday, 10:30-12:30
POSTER
Room: **POSTER N**

Session Chair(s): Dan GELB, *HP Labs*

COM-P4.1 – REPOSITIONING THE SALIENT REGION OF VIDEOS BY USING ACTIVE ILLUMINATION
Rene TEIXEIRA, *The University of Tokyo*
Kiyoharu AIZAWA, *The University of Tokyo*

COM-P4.2 – LOCAL EXTREMA BASED DIGITAL DROPOUT DETECTION IN DEGRADED ARCHIVED MEDIA
Gihun SONG, *Kyung Hee University*
Jaemyun KIM, *Kyung Hee University*
Kiok AHN, *Kyung Hee University*
Oksam CHAE, *Kyung Hee University*

COM-P4.3 – AUDIOVISUAL VOICE ACTIVITY DETECTION USING OFF-THE-SHELF CAMERAS
Sergio MONTAZZOLLI SILVA, *Federal University of Rio Grande do Sul*
Claudio ROSITO JUNG, *Federal University of Rio Grande do Sul*
Dan GELB, *HP Labs*

COM-P4.4 – PREDICTING AUDIO-VISUAL SALIENT EVENTS BASED ON VISUAL, AUDIO AND TEXT MODALITIES FOR MOVIE SUMMARIZATION
Petros KOUTRAS, *National Technical University of Athens*
Athanasia ZLATINTSI, *National Technical University of Athens*
Elias IOSIF, *National Technical University of Athens*
Athanasios KATSAMANIS, *National Technical University of Athens*
Petros MARAGOS, *National Technical University of Athens*
Alexandros POTAMIANOS, *National Technical University of Athens*

COM-P4.5 – DYNAMIC TEXTURE AND GEOMETRY FEATURES FOR FACIAL EXPRESSION RECOGNITION IN VIDEO
Junkai CHEN, *The Hong Kong Polytechnic University*
Zenghai CHEN, *The Hong Kong Polytechnic University*
Zheru CHI, *The Hong Kong Polytechnic University*
Hong FU, *The Hong Kong Polytechnic University*

COM-P4.6 – ESTIMATION OF ANGULAR DIFFERENCE BETWEEN TOMOGRAPHIC PROJECTIONS TAKEN AT UNKNOWN DIRECTIONS IN 3D
Minh Son PHAN, *University of Strasbourg*
Étienne BAUDRIER, *University of Strasbourg*
Loïc MAZO, *University of Strasbourg*
Mohamed TAJINE, *University of Strasbourg*

COM-P6: Video Communication and Networking

Wednesday, 10:30-12:30
POSTER
Room: **POSTER 0**
Session Chair(s): Akshaya MISHRA, *University of Waterloo*

COM-P6.1 – AN ADAPTIVE LAGRANGE MULTIPLIER DETERMINATION METHOD FOR RATE-DISTORTION OPTIMISATION IN HYBRID VIDEO CODECS
Fan ZHANG, *University of Bristol*
David BULL, *University of Bristol*

COM-P6.2 – INFORMATION-THEORETIC ANALYSIS OF BLINN-PHONG LIGHTING WITH APPLICATION TO MOBILE CLOUD GAMING
Seong Ping CHUAH, *Singapore University of Technology & Design*
Ngai-Man CHEUNG, *Singapore University of Technology & Design*
Chau YUEN, *Singapore University of Technology & Design*

COM-P6.3 – USER ADAPTIVE TRANSCODING FOR VIDEO TELECONFERENCING
Liangping MA, *InterDigital Communications, Inc.*
Dharm VEER, *InterDigital Communications, Inc.*
Wei CHEN, *InterDigital Communications, Inc.*
Gregory STERNBERG, *InterDigital Communications, Inc.*
Yuriy REZNIK, *InterDigital Communications, Inc.*
Ralph NEFF, *InterDigital Communications, Inc.*

COM-P6.4 – MODELING OF H.264/AVC BASED VIDEO TRANSMISSION DISTORTION OVER WIRELESS NETWORK
Guizhong LIU, *Xi'an Jiaotong University*
Rui DENG, *Xi'an Jiaotong University*

COM-P6.5 – SERVICE PROVISIONING AND PROFIT MAXIMIZATION IN NETWORK-ASSISTED ADAPTIVE HTTP STREAMING
Zhisheng YAN, *State University of New York at Buffalo*
Cedric WESTPHAL, *Huawei US R&D Center and UCSC*
Xin WANG, *Huawei US R&D Center*
Chang Wen CHEN, *State University of New York at Buffalo*

COM-P6.6 – CLUSTER ENCODING FOR MODELLING THE TEMPORAL VARIATION IN VIDEO
Negar ROSTAMZADEH, *DISI, University of Trento, Italy*
Jasper UIJLINGS, *CALVIN group, University of Edinburgh*
Ionut MIRONICA, *LAPI, University Politehnica of Bucharest, Romania*
Mojtaba KHOMAMI ABADI, *DISI, University of Trento, Italy*
Bogdan IONESCU, *LAPI, University Politehnica of Bucharest*
Nicu SEBE, *DISI, University of Trento, Italy*

ELI-O6: Multiview Processing

Wednesday, 10:30-12:30
LECTURE
Room: **202**
Session Chair(s): Atanas GOTCHEV, *Tampere University of Technology*

10:30 ELI-O6.1 – GUIDED INTEGRAL FILTER FOR LIGHT FIELD STEREO MATCHING
Hao SHENG, *Beihang University*
Shuo ZHANG, *Beihang University*
Gengliang ZHU, *Beihang University*
Zhang XIONG, *Beihang University*

10:50 ELI-O6.2 – EFFICIENT COST VOLUME SAMPLING FOR PLANE SWEEPING BASED MULTIVIEW DEPTH ESTIMATION
Olli SUOMINEN, *Tampere University of Technology*
Atanas GOTCHEV, *Tampere University of Technology*

11:10 ELI-O6.3 – LQ-BUNDLE ADJUSTMENT
Khurrum AFTAB, *Australian National University*
Richard HARTLEY, *Australian National University*

11:30 ELI-O6.4 – SUPER-RESOLUTION FOR MIXED-RESOLUTION MULTIVIEW IMAGE PLUS DEPTH DATA USING A NOVEL TWO-STAGE HIGH-FREQUENCY EXTRAPOLATION METHOD FOR OCCLUDED AREAS
Thomas RICHTER, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*
Jürgen SEILER, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*
Wolfgang SCHNURRER, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*
André KAUP, *Friedrich-Alexander University Erlangen-Nürnberg (FAU)*

11:50 ELI-O6.5 – A DATABASE OF REFLECTED IRRADIANCE FIELD WITH DEPTH FOR IMAGE BASED RELIGHTING
You YANG, *Huazhong University of Science and Technology*
Qiong LIU, *Huazhong University of Science and Technology*

12:10 ELI-O6.6 – OPTIMIZED MULTILEVEL FRINGE PATTERNS FOR REAL-TIME 3D SHAPE MEASUREMENT WITH DEFOCUSED PROJECTOR
Zi-Xin XU, *The Hong Kong Polytechnic University*
Yuk Hee CHAN, *The Hong Kong Polytechnic University*

ELI-P6: Hardware, Parallel, and Distributed System

Wednesday, 10:30-12:30
POSTER
Room: **POSTER J**

Session Chair(s): Vladan POPOVIC, *EPFL*

ELI-P6.1 – MITIGATING MEMORY REQUIREMENTS FOR RANDOM TREES/FERNS
Christophe DE VLEESCHOUWER, *Université catholique de Louvain*
Anthony LEGRAND, *Université catholique de Louvain*
Laurent JACQUES, *Université catholique de Louvain*

ELI-P6.2 – A COMPLEXITY-BASED ADAPTIVE TILE PARTITIONING ALGORITHM FOR HEVC DECODER PARALLELIZATION
Hwangjun SONG, *POSTECH (Pohang University of Science and Technology)*
Hyunki BAIK, *POSTECH (Pohang University of Science and Technology)*

ELI-P6.3 – SVM WITH OPENCL: HIGH PERFORMANCE IMPLEMENTATION OF SUPPORT VECTOR MACHINES ON HETEROGENEOUS SYSTEMS
Ethan PETERS, *Rochester Institute of Technology*
Andreas SAVAKIS, *Rochester Institute of Technology*

ELI-P6.4 – A LOW-POWER 490 MPIXELS/S HARDWARE ACCELERATOR FOR PYRAMIDAL DECOMPOSITION OF IMAGES
Vladan POPOVIC, *EPFL*
Yusuf LEBLEBICI, *EPFL*

ELI-P6.5 – HEVC INVERSE TRANSFORM ARCHITECTURE UTILIZING COEFFICIENT SPARSITY
Maleen ABEYDEERA, *University of Moratuwa*
Ajith PASQUAL, *University of Moratuwa*

ELI-P6.6 – FAST 2D AND 3D IMAGE PROCESSING WITH OPENCL
Daniel Oliveira DANTAS, *Universidade Federal de Sergipe*
Helton Danilo Passos LEAL, *Universidade Federal de Sergipe*
Davy Oliveira Barros SOUSA, *Universidade Federal de Sergipe*

IFS-O2: Multimedia Forensics

Wednesday, 10:30-12:30
LECTURE
Room: **203**

Session Chair(s): Gwenaël DOËRR, *Technicolor R&D*

10:30 IFS-O2.1 – INCREMENTAL UPDATE OF FEATURE EXTRACTOR FOR CAMERA IDENTIFICATION
Ruizhe LI, *University of Warwick*
Chang-Tsun LI, *University of Warwick*
Yu GUAN, *University of Warwick*

10:50 IFS-O2.2 – IDENTIFICATION OF ALIASING-BASED PATTERNS IN RE-CAPTURED LCD SCREENS
Babak MAHDIAN, *ASCR*
Adam NOVOZÁMSKÝ, *ASCR*
Stansilav SAIC, *ASCR*

11:10 **IFS-O2.3 –** SPATIAL DOMAIN QUANTIZATION NOISE BASED IMAGE FILTERING DETECTION
Hareesh RAVI, *Indraprastha Institute of Informaiton Technology*
Subramanyam VENKATA, *Indraprastha Institute of Informaiton Technology*
Sabu EMMANUEL, *Kuwait University*

11:30 **IFS-O2.4 –** IMAGE SPLICING DETECTION WITH LOCAL ILLUMINATION ESTIMATION
Yu FAN, *University of Poitiers*
Philippe CARRÉ, *University of Poitiers*
Christine FERNANDEZ-MALOIGNE, *University of Poitiers*

11:50 **IFS-O2.5 –** SOURCE CAMERA DEVICE IDENTIFICATION BASED ON RAW IMAGES
Tong QIAO, *University of Technology of Troyes*
Florent RETRAINT, *University of Technology of Troyes*
Remi COGRANNE, *University of Technology of Troyes*
Thanh Hai THAI, *University of Technology of Troyes*

SMR-O4: Visual Aesthetics and Quality Assessment

Wednesday, 10:30-12:30
LECTURE Room: **204B**
Session Chair(s): Sabine SÜSSTRUNK, *EPFL*

10:30 ★ **SMR-O4.1 –** A COMPREHENSIVE AESTHETIC QUALITY ASSESSMENT METHOD FOR NATURAL IMAGES USING BASIC RULES OF PHOTOGRAPHY
Eftichia MAVRIDAKI, *Centre for Research and Technology Hellas*
Vasileios MEZARIS, *Centre for Research and Technology Hellas*

10:50 **SMR-O4.2 –** VISUAL AESTHETIC QUALITY ASSESSMENT WITH A REGRESSION MODEL
Yueying KAO, *Institute of Automation, Chinese Academy of Sciences*
Chong WANG, *Institute of Automation, Chinese Academy of Sciences*
Kaiqi HUANG, *Institute of Automation, Chinese Academy of Sciences*

11:10 **SMR-O4.3 –** REGION-BASED IMAGE RETARGETING QUALITY ASSESSMENT
Yichi ZHANG, *Department of Electronic Engineering, The Chinese University of Hong Kong*
King Ngi NGAN, *Department of Electronic Engineering, The Chinese University of Hong Kong*

11:30 **SMR-O4.4 –** AUTOMATIC ASSESSMENT OF ONLINE FASHION SHOPPING PHOTO AESTHETIC QUALITY
Jianyu WANG, *Purdue University*
Jan ALLEBACH, *Purdue University*

11:50 **SMR-O4.5 –** IMAGE AESTHETICS DEPENDS ON CONTEXT
Florian SIMOND, *EPFL*
Nikolaos ARVANITOPOULOS, *EPFL*
Sabine SÜSSTRUNK, *EPFL*

12:10 **SMR-O4.6 –** PATH VS. DESTINATION: A CASE STUDY OF BLIND NOISE ASSESSMENT USING MODIFIED ANT SHORTEST PATH
Li CHEN, *wuhan university of science and technology*
Xiaotong HUANG, *wuhan university of science and technology*
Jing TIAN, *wuhan university of science and technology*

SMR-P10: Video Quality and Image-based Specific Application Assessment

Wednesday, 10:30-12:30
POSTER Room: **POSTER H**
Session Chair(s): Ghassan ALREGIB, *Georgia Institute of Technology*

SMR-P10.1 – A VERY LOW COMPLEXITY REDUCED REFERENCE VIDEO QUALITY METRIC BASED ON SPATIO-TEMPORAL INFORMATION SELECTION
Mengmeng WANG, *University of Bristol*
Fan ZHANG, *University of Bristol*
Dimitris AGRAFIOTIS, *University of Bristol*

SMR-P10.2 – AN OBJECTIVE 3D QUALITY ASSESSMENT MODEL TO ADJUST STEREO CAMERA BASELINE
Marcelo MIGUEL, *National Institute of Industrial Property*
Carla PAGLIARI, *Military Institute of Engineering*
Eduardo SILVA, *Federal University of Rio de Janeiro*
Marcelo PEREZ, *Military Institute of Engineering*

SMR-P10.3 – PERCEPTUAL EVALUATION OF SINGLE IMAGE DEHAZING ALGORITHMS
Kede MA, *University of Waterloo*
Wentao LIU, *University of Waterloo*
Zhou WANG, *University of Waterloo*

SMR-P10.4 – OBJECTIVE QUALITY METRIC FOR 3D VIRTUAL VIEWS
Muhammad Shahid FARID, *Universita' di Torino*
Maurizio LUCENTEFORTE, *Universita' di Torino*
Marco GRANGETTO, *Universita' di Torino*

SMR-P10.5 – A CURVELET-BASED DISTANCE MEASURE FOR SEISMIC IMAGES
Yazeed ALAUDAH, *Georgia Institute of Technology*
Ghassan ALREGIB, *Georgia Institute of Technology*

SMR-P10.6 – BLIND MULTIPLY DISTORTED IMAGE QUALITY ASSESSMENT USING RELEVANT PERCEPTUAL FEATURES
Chaofeng LI, *Jiangnan Univ.*
Yu ZHANG, *Jiangnan Univ.*
Xiaojun WU, *Jiangnan Univ.*
Wei FANG, *Jiangnan Univ.*
Li MAO, *Jiangnan Univ.*

SNT-S7: Show & Tell VII

Wednesday, 10:30-12:30
SHOW & TELL Room: **SHOW & TELL**
Session Chair(s): Fabrice LABEAU, *McGill University*

SNT-S7.1 – LANDMARK DETECTION AND 3D FACE RECONSTRUCTION USING MODERN C++
Patrik HUBER, *Centre for Vision, Speech and Signal Processing, University of Surrey*
Zenhua FENG, *Centre for Vision, Speech and Signal Processing, University of Surrey*
This demonstration will contain a live presentation of a novel 3D face fitting technique. It will run on a webcam and people will be able to try it out live. A second am of this demonstration is to present accompanying libraries for 2D landmark detection and 3D Morphable Face Model fitting that are available as source code on Github

SNT-S7.2 – HOW TO TRACK YOU HEART RATE WITH A CAMERA WHILE EXERCISING
Jacob GUNTHER, *Utah State University*
Nathan RUBEN, *Utah State University*
We propose to demonstrate a system in which a stationary machine, such as a treadmill or exercise bike, can be fitted with a simple camera which accurately tracks the heart rate of the user. Participants will be recorded during a short exercise period during the demo, and the system will be used to estimate heart rate.

SNT-S7.3 – BARCODES - A NEW GENERATION OF BINARY DESCRIPTORS
Hamid R. TIZHOOSH, *Univerisity of Waterloo*
In this demo, we will demonstrate how content-based barcodes are generated to annotate digital images. Both automated and manual barcode generation will be demonstrated. The demo consists of both a training phase in which barcodes are extracted and stored, and a retrieval phase in which similar images are found for give input images. The audience can participate to challenge the software by selecting input images (e.g. from available data or from Internet)

SNT-S7.4 – AUTOMATIC SEGMENTATION OF NATURAL IMAGE WITH ANISOTROPIC FAST MARCHING ALGORITHM AND GEODESIC VOTING
Vijaya Kumar GHORPADE, *University Paris Dauphine, CEREMADE*
We will demonstrate a method for complete automation of segmentation. Seeds and Tips are automatically detected, and geodesics are calculated using Anisotropic Fast Marching algorithm. Fast marching algorithm computes in a single pass, the evolution of the front, at a speed locally given by its position.

SS10-O1: Perceptual Video Compression – for HEVC and Beyond

Wednesday, 10:30-12:30
LECTURE Room: **205B**

Session Chair(s): Sebastian SCHWARZ, *BBC Research & Development*
David BULL, *University of Bristol*
Patrick LE CALLET, *Université de Nantes*

10:30 SS10-O1.1 – A NO REFERENCE TEXTURE GRANULARITY INDEX AND APPLICATION TO VISUAL MEDIA COMPRESSION
Mahesh SUBEDAR, *Arizona State University*
Lina J. KARAM, *Arizona State University*

10:50 SS10-O1.2 – PERCEPTUAL SCREEN CONTENT IMAGE QUALITY ASSESSMENT AND COMPRESSION
Shiqi WANG, *Dept. of Electrical and Computer Engineering, University of Waterloo*
Ke GU, *Shanghai Jiao Tong University*
Kai ZENG, *Dept. of Electrical and Computer Engineering, University of Waterloo*
Zhou WANG, *Dept. of Electrical and Computer Engineering, University of Waterloo*
Weisi LIN, *Nanyang Technological University*

11:10 SS10-O1.3 – ADAPTIVE QUANTISATION IN HEVC FOR CONTOURING ARTEFACTS REMOVAL IN UHD CONTENT
Nicolo CASALI, *BBC R&D - Università degli studi di Brescia*
Matteo NACCARI, *BBC R&D*
Marta MRAK, *BBC R&D*
Riccardo LEONARDI, *Università degli studi di Brescia*

11:30 **SS10-01.4 –** A VIDEO TEXTURE DATABASE FOR PERCEPTUAL COMPRESSION AND QUALITY ASSESSMENT
Miltiadis Alexios PAPADOPOULOS, *University of Bristol*
Fan ZHANG, *University of Bristol*
Dimitris AGRAFIOTIS, *University of Bristol*
David BULL, *University of Bristol*

11:50 **SS10-01.5 –** A FRAME LEVEL METRIC FOR JUST NOTICEABLE TEMPORAL PUMPING ARTIFACT IN VIDEOS ENCODED WITH THE HIERARCHICAL PREDICTION STRUCTURE
Yanchao GONG, *Northwestern Polytechnical University*
Shuai WAN, *Northwestern Polytechnical University*
Fuzheng YANG, *xidian University*
Hong Ren WU, *Royal Melbourne Institute of Technology*
Bo LI, *Northwestern Polytechnical University*

SS1-P1: Industry Special Session I

Wednesday, 10:30-12:30
POSTER
Room: **POSTER K**

Session Chair(s): Tong ZHANG, *Hewlett-Packard Labs*

★ **SS1-P1.1 –** APPLYING IMAGE ANALYSIS TO ASSESS FOOD AESTHETICS AND UNIQUENESS
Ying LI, *IBM T. J. Watson Research Center*
Anshul SHEOPURI, *IBM T. J. Watson Research Center*

SS1-P1.2 – SOFTWARE DEFINED NETWORKING FOR VIDEO: OVERVIEW AND EXAMPLE
Wai-Tian TAN, *Cisco Systems*
Herb WILDFEUER, *Cisco Systems*
John APOSTOLOPOULOS, *Cisco Systems*

SS1-P1.3 – 360 DEGREES VIDEO CODING USING REGION ADAPTIVE SMOOTHING
Madhukar BUDAGAVI, *Samsung Research America, Dallas*
John FURTON, *Samsung Research America, Dallas*
Guoxin JIN, *Northwestern University*
Ankur SAXENA, *Samsung Research America, Dallas*
Jeffrey WILKINSON, *Samsung Research America, Dallas*
Andrew DICKERSON, *Samsung Research America, Dallas*

SS1-P1.4 – BRIDGING COMPUTER VISION AND SOCIAL SCIENCE: A MULTI-CAMERA VISION SYSTEM FOR SOCIAL INTERACTION TRAINING ANALYSIS
Jixu CHEN, *GE Global Research*
Ming-Ching CHANG, *GE Global Research*
Tai-Peng TIAN, *GE Global Research*
Ting YU, *GE Global Research*
Peter TU, *GE Global Research*

SS1-P1.5 – COMPUTATIONALLY EFFICIENT, REAL-TIME MOTION RECOGNITION BASED ON BIO-INSPIRED VISUAL AND COGNITIVE PROCESSING
Paul K. J. PARK, *Samsung Electronics*
Kyoobin LEE, *Samsung Electronics*
Jun Haeng LEE, *Samsung Electronics*
Byungkon KANG, *Samsung Electronics*
Chang-Woo SHIN, *Samsung Electronics*
Jooyeon WOO, *Samsung Electronics*
Jun-Seok KIM, *Samsung Electronics*
Yunjae SUH, *Samsung Electronics*
Sungho KIM, *Samsung Electronics*
Saber MORADI, *Samsung Electronics*
Ogan GUREL, *Samsung Electronics*
Hyunsurk RYU, *Samsung Electronics*

SS1-P2: Industry Special Session II

Wednesday, 10:30-12:30
POSTER
Room: **POSTER L**

Session Chair(s): Tong ZHANG, *Hewlett-Packard Labs*

SS1-P2.1 – PIRM: FAST BACKGROUND SUBTRACTION UNDER SUDDEN, LOCAL ILLUMINATION CHANGES VIA PROBABILISTIC ILLUMINATION RANGE MODELLING
Parthipan SIVA, *Aimetis Corp*
Mohammad Javad SHAFIEE, *University of Waterloo*
Francis LI, *University of Waterloo*
Alexander WONG, *University of Waterloo*

SS1-P2.2 – TEXTURELESS OBJECT DETECTION USING CUMULATIVE ORIENTATION FEATURE
Yoshihisa IJIRI, *OMRON Corporation*
Masaki SUWA, *OMRON Corporation*
Masato KAWADE, *OMRON Corporation*
Yoshinori KONISHI, *OMRON Corporation*

SS1-P2.3 – RETURN OF GRID SEAMS: A SUPERPIXEL ALGORITHM USING DISCONTINUOUS MULTI-FUNCTIONAL ENERGY SEAM CARVING
Parthipan SIVA, *Aimetis Corp*
Christian SCHARFENBERGER, *University of Waterloo*
Ibrahim DAYA, *University of Waterloo*
Akshaya MISHRA, *University of Waterloo*
Alexander WONG, *University of Waterloo*

SS1-P2.4 – CHALLENGES IN CLOUD BASED INGEST AND ENCODING FOR HIGH QUALITY STREAMING MEDIA
Anne AARON, *Netflix*
Zhi LI, *Netflix*
Megha MANOHARA, *Netflix*
Joe Yuchieh LIN, *University of Southern California*
Eddy Chi-Hao WU, *University of Southern California*
C.-C. Jay KUO, *University of Southern California*

★ **SS1-P2.5 –** DREM: DECOUPLED REGION ENERGY MODEL FOR IMAGE SEGMENTATION
Akshaya MISHRA, *Miovision Technologies*
Justin EICHEL, *Miovision Technologies*
Tyler ABBOTT, *Miovision Technologies*

SS1-P2.6 – LOW-COMPLEXITY HOG FOR EFFICIENT VIDEO SALIENCY
Teahyung LEE, *Intel*
Myung HWANGBO, *Intel*
Tanfer ALAN, *Computer Systems Group, TU Darmstadt*
Omesh TICKOO, *Intel*
Ravishankar IYER, *Intel*

SS1-P3: Industry Special Session III

Wednesday, 10:30-12:30
POSTER
Room: **POSTER M**
Session Chair(s): Tong ZHANG, *Hewlett-Packard Labs*

SS1-P3.1 – A TWO-STAGE VIDEO OBJECT SEGMENTATION USING MOTION AND COLOR INFORMATION
Marc BOSCH, *Qualcomm, Inc.*
Guiqin LI, *Qualcomm, Inc.*
Kai WANG, *Qualcomm, Inc.*

SS1-P3.2 – HYPER-PARAMETER OPTIMIZATION OF DEEP CONVOLUTIONAL NETWORKS FOR OBJECT RECOGNITION
Sachin TALATHI, *Qualcomm Inc*

★ **SS1-P3.3 –** THE EMBEDDABILITY OF LANE DETECTION ALGORITHMS ON HETEROGENEOUS ARCHITECTURES
Romain SAUSSARD, *Renault S.A.S.*
Boubker BOUZID, *Renault S.A.S.*
Marius VASILIU, *Institut d'Électronique Fondamentale - Université Paris Sud*
Roger REYNAUD, *Institut d'Electronique Fondamentale - Université Paris Sud*

TEC-O7: Automated Segmentation of Radiology images

Wednesday, 10:30-12:30
LECTURE
Room: **204A**
Session Chair(s): Michel DESVIGNES, *Grenoble-INP/ GIPSA-LAB*

10:30 TEC-O7.1 – CENTER-FREE PFCM FOR MRI BRAIN IMAGE SEGMENTATION
Xiangzhi BAI, *Image Processing Center, Beihang University*
Zhiguo CHEN, *Image Processing Center, Beihang University*
Miaoming LIU, *Image Processing Center, Beihang University*
Yu ZHANG, *Image Processing Center, Beihang University*

10:50 **TEC-O7.2 –** HIERARCHICAL SEGMENTATION AND TRACKING OF CORONARY ARTERIES IN 2D X-RAY ANGIOGRAPHY SEQUENCES
Faten M'HIRI, *École de technologie supérieure*
Ngan LE T. HOANG, *Carnegie Mellon University*
Luc DUONG, *École de technologie supérieure*
Christian DESROSIERS, *École de technologie supérieure*
Mohamed CHERIET, *École de technologie supérieure*

11:10 **TEC-O7.3 –** LIVER SEGMENTATION USING SUPERPIXEL-BASED GRAPH CUTS AND RESTRICTED REGIONS OF SHAPE CONSTRAINS
Titinunt KITRUNGROTSAKUL, *Ritsumeikan University*
Xian-Hua HAN, *Ritsumeikan University*
Yen-Wei CHEN, *Ritsumeikan University*

11:30 **TEC-O7.4 –** SEGMENTATION OF PATHOLOGICAL LUNGS FROM CT CHEST IMAGES
Ahmed SOLIMAN, *University of Louisville*
Ahmed ELNAKIB, *University of Louisville*
Fahmi KHALIFA, *University of Louisville*
Mohamed ABOU EL-GHAR, *Mansoura University*
Ayman EL-BAZ, *University of Louisville*

11:50 **TEC-O7.5 –** DISC SEGMENTATION AND BMO-MRW MEASUREMENT FROM SD-OCT IMAGE USING GRAPH SEARCH AND TRACING OF THREE BENCH MARK LAYERS OF RETINA
Md Akter HUSSAIN, *The University of Melbourne*
Alauddin BHUIYAN, *The University Of Melbourne*
Kotagiri RAMAMOHANARAO, *The University Of Melbourne*

12:10 **TEC-O7.6 –** MYOCARDIUM SEGMENTATION ON 3D SPECT IMAGES
J. POUJOL, *GIPSA-LAB, UMR 5216*
Michel DESVIGNES, *GIPSA-LAB, UMR 5216*
A. BROISAT, *GIPSA-LAB, UMR 5216*
G. BARONE-ROCHETTE, *GIPSA-LAB, UMR 5216*
G. VANZETTO, *GIPSA-LAB, UMR 5216*
D. FAGRET, *GIPSA-LAB, UMR 5216*
L. RIOU, *GIPSA-LAB, UMR 5216*
C. GHEZZI, *GIPSA-LAB, UMR 5216*

TEC-P14: Linear and Non-Linear Filtering

Wednesday, 10:30-12:30
POSTER
Room: **POSTER G**

Session Chair(s): Yuichi TANAKA, *Tokyo University of Agriculture and Technology*

TEC-P14.1 – AN ACCELERATED SEPARABLE MEDIAN FILTER WITH SORTING NETWORKS
Minsik KIM, *Yonsei University*
Deokho KIM, *Yonsei University*
Minyong SUNG, *Yonsei University*
Won Woo RO, *Yonsei University*

TEC-P14.2 – EXTENDING ALPHA-EXPANSION TO A LARGER SET OF REGULARIZATION FUNCTIONS
Mathias PAGET, *IFSTTAR*
Jean-Philippe TAREL, *IFSTTAR*
Laurent CARAFFA, *IGN*

TEC-P14.3 – EFFICIENT O(1) EDGE-AWARE FILTER
Mingcai ZHOU, *Samsung Research Center-Beijing, SAIT China Lab*
Zhihua LIU, *Samsung Research Center-Beijing, SAIT China Lab*
Xun SUN, *Baidu Institute of Deep Learning, Beijing, China*
Tao HONG, *Samsung Research Center-Beijing, SAIT China Lab*
Xiying WANG, *Samsung Research Center-Beijing, SAIT China Lab*
Haitao WANG, *Samsung Research Center-Beijing, SAIT China Lab*

TEC-P14.4 – FAST AND ACCURATE BILATERAL FILTERING USING GAUSS-POLYNOMIAL DECOMPOSITION
Kunal CHAUDHURY, *Indian Institute of Science*

TEC-P14.5 – AN ESTIMATION-THEORETIC APPROACH TO VIDEO DENOISEING
Jingning HAN, *Google Inc.*
Timothy KOPP, *Google Inc.*
Yaowu XU, *Google Inc.*

TEC-P14.6 – NON-LOCAL/LOCAL IMAGE FILTERS USING FAST EIGENVALUE FILTERING
Masaki ONUKI, *Tokyo University of Agriculture and Technology*
Shunsuke ONO, *Tokyo Institute of Technology*
Keiichiro SHIRAI, *Shinshu University*
Yuichi TANAKA, *Tokyo University of Agriculture and Technology*

TEC-P21: Parametric and Energy-based Segmentation

Wednesday, 10:30-12:30
POSTER Room: **POSTER E**

Session Chair(s): Neeraj DHUNGEL, *University of Adelaide*

★ **TEC-P21.1 –** NEW PARAMETRIC 3D SNAKE FOR MEDICAL SEGMENTATION OF STRUCTURES WITH CYLINDRICAL TOPOLOGY
Daniel SCHMITTER, *EPFL*
Christophe GAUDET-BLAVIGNAC, *EPFL*
Davide PICCINI, *Advanced Clinical Imaging Technology Group, Siemens*
Michael UNSER, *EPFL*

TEC-P21.2 – LOCALLY REFINABLE PARAMETRIC SNAKES
Anaïs BADOUAL, *EPFL*
Daniel SCHMITTER, *EPFL*
Michael UNSER, *EPFL*

TEC-P21.3 – AN AUTOMATIC ENERGY-BASED REGION GROWING METHOD FOR ULTRASOUND IMAGE SEGMENTATION
Weining WANG, *South China University of Technology*
Jiachang LI, *South China University of Technology*
Yizi JIANG, *South China University of Technology*
Yi XING, *Nanchang Municipal Liver Diseases Hospital*
Xiangmin XU, *South China University of Technology*

TEC-P21.4 – LUNG SEGMENTATION IN CHEST RADIOGRAPHS USING DISTANCE REGULARIZED LEVEL SET AND DEEP-STRUCTURED LEARNING AND INFERENCE
Tuan Anh NGO, *The University of Adelaide*
Gustavo CARNEIRO, *The University of Adelaide*

TEC-P22: Restoration, Denoising and Demosaicking

Wednesday, 10:30-12:30
POSTER Room: **POSTER F**
Session Chair(s): Jeffrey FESSLER, *University of Michigan*

TEC-P22.1 – NONPARAMETRIC EMPIRICAL BAYES ESTIMATION FOR MULTIPLICATIVE MULTISCALE INNOVATION IN PHOTON-LIMITED IMAGING
Wu CHENG, *University of Dayton*
Keigo HIRAKAWA, *University of Dayton*

TEC-P22.2 – EFFICIENT REGRESSION PRIORS FOR POST-PROCESSING DEMOSAICED IMAGES
Jiqing WU, *ETH Zurich*
Radu TIMOFTE, *ETH Zurich*
Luc VAN GOOL, *ETH Zurich*

★ **TEC-P22.3 –** AN OPTIMIZED FIRST-ORDER METHOD FOR IMAGE RESTORATION
Donghwan KIM, *University of Michigan*
Jeffrey FESSLER, *University of Michigan*

TEC-P22.4 – IMAGE COLORIZATION VIA COLOR PROPAGATION AND RANK MINIMIZATION
Yonggen LING, *Hong Kong University of Science and Technology*
Oscar C. AU, *Hong Kong University of Science and Technology*
Jiahao PANG, *Hong Kong University of Science and Technology*
Jin ZENG, *Hong Kong University of Science and Technology*
Yuan YUAN, *Hong Kong University of Science and Technology*
Amin ZHENG, *Hong Kong University of Science and Technology*

★ **TEC-P22.5 –** PMPA: A PATCH-BASED MULTISCALE PRODUCTS ALGORITHM FOR IMAGE DENOISING
Tao DAI, *Tsinghua University*
Chao-Bing SONG, *Tsinghua University*
Ji-Ping ZHANG, *Tsinghua University*
Shu-Tao XIA, *Tsinghua University*

TEC-P22.6 – PARAMETER ESTIMATION FOR L_P REGULARIZED IMAGE DECONVOLUTION
Xu ZHOU, *Beihang University*
Fugen ZHOU, *Beihang University*
Xiangzhi BAI, *Beihang University*

TEC-P6: Focus and Lens

Wednesday, 10:30-12:30
POSTER Room: **POSTER D**
Session Chair(s): Ivana TOSIC, *Ricoh Innovations Corp.*

★ **TEC-P6.1 –** TRANSFORMATION OF FOCUS PROFILES FOR DIGITAL AUTOFOCUS
Dong-Chen TSAI, *National Taiwan University*
Homer CHEN, *National Taiwan University*

TEC-P6.2 – DEEPFOCAL: A METHOD FOR DIRECT FOCAL LENGTH ESTIMATION
Scott WORKMAN, *University of Kentucky*
Connor GREENWELL, *University of Kentucky*
Menghua ZHAI, *University of Kentucky*
Ryan BALTENBERGER, *University of Kentucky*
Nathan JACOBS, *University of Kentucky*

TEC-P6.3 – RADIAL LENS DISTORTION CORRECTION USING CASCADED ONE-PARAMETER DIVISION MODEL
Xiang MEI, *Peking University*
Sen YANG, *Peking University*
Jiangpeng RONG, *Peking University*
Xianghua YING, *Peking University*
Shiyao HUANG, *Peking University*
Hongbin ZHA, *Peking University*

TEC-P6.4 – PIECEWISE DISTORTION CORRECTION FOR FISHEYE LENSES
Marco MARCON, *Politecnico di Milano*
Augusto SARTI, *Politecnico di Milano*
Stefano TUBARO, *Politecnico di Milano*

TEC-P6.5 – MULTIPLE EXPOSURE INTEGRATION FOR RESTORING ALL IN-FOCUS IMAGES
Ryo MATSUOKA, *The university of kitakyushu*
Haruki ISHIBASHI, *The university of kitakyushu*
Tatsuya BABA, *The university of kitakyushu*
Masahiro OKUDA, *The university of kitakyushu*

TEC-P6.6 – FOCAL LENGTH CHANGE COMPENSATION FOR MONOCULAR SLAM
Takafumi TAKETOMI, *Nara Institute of Science and Technology*
Janne HEIKKILÄ, *University of Oulu*

ARS-O12: Machine Learning and Scene Analysis

Wednesday, 14:00-16:00
LECTURE
Room: **204B**
Session Chair(s): Benoît HUET, Eurecom

14:00 ARS-O12.1 – RANDOMIZED SPATIAL POOLING IN DEEP CONVOLUTIONAL NETWORKS FOR SCENE RECOGNITION
Mu YANG, *Tsinghua University*
Brian LI, *Megvii Inc.*
Yuning JIANG, *Megvii Inc.*

14:20 ARS-O12.2 – ANOMALY DETECTION BY USING RANDOM PROJECTION FOREST
Fan CHEN, *Japan Advanced Institute of Science and Technology*
Zicheng LIU, *Microsoft Research Redmond*
Ming-Ting SUN, *University of Washington*

14:40 ARS-O12.3 – NONPARAMETRIC SCENE PARSING WITH DEEP CONVOLUTIONAL FEATURES AND DENSE ALIGNMENT
Chiou-Ting HSU, *National Tsing Hua University*
Chih-Hao MA, *National Tsing Hua University*
Benoît HUET, *Eurecom*

15:00 **ARS-O12.4 –** SWAP NODE: REGULARIZATION APPROACH FOR DEEP CONVOLUTIONAL NEURAL NETWORK
Takayoshi YAMASHITA, *Chubu University*
Masayuki TANAKA, *Tokyo Institute of Technology*
Yuji YAMAUCHI, *Chubu University*
Hironobu FUJIYOSHI, *Chubu University*

15:20 **ARS-O12.5 –** WEATHER CLASSIFICATION WITH DEEP CONVOLUTIONAL NEURAL NETWORKS
Mohammed ELHOSEINY, *Rutgers University*
Sheng HUANG, *Chongqing University*
Ahmed ELGAMMAL, *Rutgers University*

15:40 **ARS-O12.6 –** CONTEXTUAL KERNEL MAP LEARNING FOR SCENE TRANSDUCTION
Phong VO, *CNRS TELECOM ParisTech*
Hichem SAHBI, *CNRS TELECOM ParisTech*

ARS-O9: Image Segmentation IV

Wednesday, 14:00-16:00
LECTURE
Room: **203**
Session Chair(s): A. Enis ÇETIN, *Bilkent University*
Oguzhan OGUZ, *Bilkent University*

14:00 **ARS-O9.1 –** FINE-GRAINED VISUAL CATEGORIZATION WITH FINE-TUNED SEGMENTATION
Lingyun LI, *Dalian University of Technology*
Yanqing GUO, *Dalian University of Technology*
Lingxi XIE, *Tsinghua University*
Xiangwei KONG, *Dalian University of Technology*
Qi TIAN, *University of Texas at San Antonio*

14:20 **ARS-O9.2 –** DISCRIMINATIVE REGIONAL COLOR CO-OCCURRENCE DESCRIPTOR
Qin ZOU, *Wuhan University*
Xianbiao QI, *Shenzhen University*
Qingquan LI, *Shenzhen University*
Song WANG, *University of South Carolina*

14:40 ★ **ARS-O9.3 –** PARTIALLY OCCLUDED OBJECT DETECTION BY FINDING THE VISIBLE FEATURES AND PARTS
Kai Chi CHAN, *Purdue University*
Alper AYVACI, *Honda Research Institute*
Bernd HEISELE, *Honda Research Institute*

15:00 ★ **ARS-O9.4 –** REAL-TIME DYNAMIC TEXTURE RECOGNITION USING RANDOM SAMPLING AND DIMENSION REDUCTION
Osman GUNAY, *Bilkent University*
A. Enis ÇETIN, *Bilkent University*

15:20 **ARS-O9.5 –** IMPROVED FINE STRUCTURE MODELING VIA GUIDED STOCHASTIC CLIQUE FORMATION IN FULLY CONNECTED CONDITIONAL RANDOM FIELDS
Mohammad Javad SHAFIEE, *University of Waterloo*
Audrey CHUNG, *University of Waterloo*
Alexander WONG, *University of Waterloo*
Paul FIEGUTH, *University of Waterloo*

15:40 ARS-O9.6 – IMPROVING SPATIAL CODIFICATION IN SEMANTIC SEGMENTATION
Carles VENTURA, *Universitat Politècnica de Catalunya*
Xavier GIRÓ-I-NIETO, *Universitat Politècnica de Catalunya*
Verónica VILAPLANA, *Universitat Politècnica de Catalunya*
Kevin MCGUINNESS, *Insight Centre for Data Analytics, Dublin City University*
Ferran MARQUÉS, *Universitat Politècnica de Catalunya*
Noel E. O'CONNOR, *Insight Centre for Data Analytics, Dublin City University*

ARS-P20: Machine Learning for Image Segmentation

Wednesday, 14:00-16:00
POSTER
Room: **POSTER A**

Session Chair(s): Andreas UHL, *Salzburg University*

ARS-P20.1 – IMAGE SEGMENTATION WITH THE COMPETITIVE LEARNING BASED MS MODEL
Junfeng LUO, *Peking University*
Jinwen MA, *Peking University*

ARS-P20.2 – OBJECT SEGMENTATION WITH DEEP REGRESSION
Jianchao LI, *Key Laboratory of Intelligent Information Processing of Chinese Academy of Sciences (CAS)*
Dan WANG, *Key Laboratory of Intelligent Information Processing of Chinese Academy of Sciences (CAS)*
Canxiang YAN, *Institute of Deep Learning, Baidu, Inc.,*
Shiguang SHAN, *Key Laboratory of Intelligent Information Processing of Chinese Academy of Sciences (CAS)*

ARS-P20.3 – LEARNING SHAPE PRIORS FOR OBJECT SEGMENTATION VIA NEURAL NETWORKS
Simon SAFAR, *University of California at Merced*
Ming-Hsuan YANG, *University of California at Merced*

ARS-P20.4 – HOW TO EXPLOIT LARGE IMAGE DATA IN THE FIELDS OF TEXTURE CLASSIFICATION: A CASE STUDY WITH LOCAL BINARY PATTERNS
Michael GADERMAYR, *University of Salzburg*
Andreas UHL, *University of Salzburg*

ARS-P20.5 – RANKED K-MEANS CLUSTERING FOR TERAHERTZ IMAGE SEGMENTATION
Mohamed Walid AYECH, *Sherbrooke University*
Djemel ZIOU, *Sherbrooke University*

ARS-P20.6 – CANNET: CONTEXT AWARE NONLOCAL CONVOLUTIONAL NETWORKS FOR SEMANTIC IMAGE SEGMENTATION
Lingyan RAN, *Northwestern Polytechnical Unversity*
Yanning ZHANG, *Northwestern Polytechnical Unversity*
Gang HUA, *Stevens Institute of Technology*

ARS-P24: Object Recognition I

Wednesday, 14:00-16:00
POSTER
Room: **POSTER C**

Session Chair(s): Clinton FOOKES, *Queensland University of Technology*

ARS-P24.1 – OBJECT CLASSIFICATION FROM RGB-D IMAGES USING DEPTH CONTEXT KERNEL DESCRIPTORS
Hong PAN, *University of Copenhagen*
Søren OLSEN, *University of Copenhagen*
Yaping ZHU, *University of Copenhagen*

ARS-P24.2 – SELECTIVE PARTS FOR FINE-GRAINED RECOGNITION
Dong LI, *Tsinghua University*
Yali LI, *Tsinghua University*
Shengjin WANG, *Tsinghua University*

ARS-P24.3 – DEPTH UPSAMPLING METHOD VIA MARKOV RANDOM FIELDS WITHOUT EDGE-MISALIGNED ARTIFACTS
Yifan ZUO, *Shanghai University*
Ping AN, *Shanghai University*

ARS-P24.4 – CONTEXT-AWARE LANE MARKING DETECTION ON URBAN ROADS
Tao CHEN, *Institute for Infocomm Research, Agency for Science, Technology and Research*
Shijian LU, *Institute for Infocomm Research, Agency for Science, Technology and Research*

ARS-P24.5 – LAPLACE-BELTRAMI SPECTRA FOR SHAPE COMPARISON OF SURFACES IN 3D USING THE CLOSEST POINT METHOD
Reynaldo ARTEAGA, *Simon Fraser University*
Steven RUUTH, *Simon Fraser University*

ARS-P24.6 – COMBAT SPORTS ANALYTICS: BOXING PUNCH CLASSIFICATION USING OVERHEAD DEPTH IMAGERY
Soudeh KASIRI BIDHENDI, *Queensland University of Technology*
Clinton FOOKES, *Queensland University of Technology*
Stuart MORGAN, *Australian Institute of Sport*
David MARTIN, *Australian Institute of Sport*
Sridha SRIDHARAN, *Queensland University of Technology*

ARS-P25: Object Recognition II

Wednesday, 14:00-16:00
POSTER
Room: **POSTER D**

Session Chair(s): Clinton FOOKES, *Queensland University of Technology*

ARS-P25.1 – LR-CNN FOR FINE-GRAINED CLASSIFICATION WITH VARYING RESOLUTION
Marion CHEVALIER, *LIP6, UPMC*
Nicolas THOME, *LIP6, UPMC*
Matthieu CORD, *LIP6, UPMC*
Jérôme FOURNIER, *Thales Optronique S.A.S.*
Gilles HENAFF, *Thales Optronique S.A.S.*
Elodie DUSCH, *Thales Optronique S.A.S.*

ARS-P25.2 – REAL-TIME SEMANTIC CONTEXT LABELING FOR IMAGE UNDERSTANDING
Martin A. R. PIECK, *Eindhoven University of Technology*
Fons VAN DER SOMMEN, *Eindhoven University of Technology*
Svitlana ZINGER, *Eindhoven University of Technology*
Peter H. N. DE WITH, *Eindhoven University of Technology*

ARS-P25.3 – MINE THE FINE: FINE-GRAINED FRAGMENT DISCOVERY
M. Hadi KIAPOUR, *University of North Carolina at Chapel Hill*
Wei DI, *eBay Research Labs*
Vignesh JAGADEESH, *eBay Research Labs*
Robinson PIRAMUTHU, *eBay Research Labs*

ARS-P25.4 – EPITOMIC IMAGE FACTORIZATION VIA NEIGHBOR-EMBEDDING
Mehmet TURKAN, *Technicolor R&D France / Izmir University of Economics*
Dominique THOREAU, *Technicolor R&D France*
Philippe GUILLOTEL, *Technicolor R&D France*
Martin ALAIN, *Technicolor R&D / INRIA*
Christine GUILLEMOT, *INRIA*

ARS-P25.5 – GROUND-BASED CLOUD IMAGE CATEGORIZATION USING DEEP CONVOLUTIONAL VISUAL FEATURES
Liang YE, *Huazhong University of Science and Technology P.R.China*
Zhiguo CAO, *Huazhong University of Science and Technology*
Yang XIAO, *Huazhong University of Science and Technology*
Wei LI, *Huazhong University of Science and Technology*

ARS-P25.6 – ULTRA-FAST PARALLEL REGISTRATION FOR BAYER RAW DATA
Junying YANG, *Chongqing University*
Zhenghao LI, *Chongqing University*
Peng HAN, *Chongqing Academy of Science and Technology*
Yang RAN, *Chongqing Academy of Science and Technology*

ARS-P30: Video Analysis

Wednesday, 14:00-16:00
POSTER
Room: **POSTER B**

Session Chair(s): Irene Yu-Hua GU, *Chalmers University of Technology*

ARS-P30.1 – EXPLOITING EFFECTS OF PARTS IN FINE-GRAINED CATEGORIZATION OF VEHICLES
Liang LIAO, *School of Computer Science, Wuhan University*
Ruimin HU, *School of Computer Science, Wuhan University*
Jun XIAO, *School of Computer Science, Wuhan University*
Qi WANG, *School of Computer Science, Wuhan University*
Jing XIAO, *School of Computer Science, Wuhan University*
Jun CHEN, *School of Computer Science, Wuhan University*

ARS-P30.2 – TRUE MOTION COMPENSATION WITH FEATURE DETECTION FOR FRAME RATE UP-CONVERSION
Kyungah KIM, *Yonsei University*
Minwoo KIM, *Yonsei University*
Deokho KIM, *Yonsei University*
Won Woo RO, *Yonsei University*

ARS-P30.3 – RESIDUE BOUNDARY HISTOGRAMS FOR ACTION RECOGNITION IN THE COMPRESSED DOMAIN
Jie MIAO, *South China University of Technology*
Xiangmin XU, *South China University of Technology*
Reji MATHEW, *The University of New South Wales*
Haoyu HUANG, *South China University of Technology*

ARS-P30.4 – HUMAN FALL DETECTION VIA SHAPE ANALYSIS ON RIEMANNIAN MANIFOLDS WITH APPLICATIONS TO ELDERLY CARE
Yixiao YUN, *Chalmers University of Technology*
Irene Yu-Hua GU, *Chalmers University of Technology*

ARS-P30.5 – TRAFFIC ANALYSIS WITHOUT MOTION FEATURES
Zhiming LUO, *Xiamen University / Université de Sherbrooke*
Pierre-Marc JODOIN, *Université de Sherbrooke*
Shao-Zi LI, *Xiamen University*
Song-Zhi SU, *Xiamen University*

ARS-P30.6 – RERANKING OF PERSON RE-IDENTIFICATION BY MANIFOLD-BASED APPROACH
Shuai HUANG, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Yun GU, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Jie YANG, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Pengfei SHI, *Institute of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*

COM-P5: Video Coding II

Wednesday, 14:00-16:00
POSTER
Room: **POSTER N**

Session Chair(s): Onur GULERYUZ, *LG Electronics*

COM-P5.1 – AN ADAPTIVE SEARCH ORDERING FOR RATE-CONSTRAINED SUCCESSIVE ELIMINATION ALGORITHMS
Luc TRUDEAU, *École de technologie supérieure*
Stéphane COULOMBE, *École de technologie supérieure*
Christian DESROSIERS, *École de technologie supérieure*

COM-P5.2 – LOW-COMPLEXITY RATE CONTROL IN VIDEO CODING BASED ON BI-GEOMETRIC TRANSPARENT COMPOSITE MODELS
Yueming GAO, *University of Waterloo*
En-Hui YANG, *University of Waterloo*
Da-Ke HE, *BlackBerry*

COM-P5.3 – A TWO-STAGE VIDEO CODING FRAMEWORK WITH BOTH SELF-ADAPTIVE REDUNDANT DICTIONARY AND ADAPTIVELY ORTHONORMALIZED DCT BASIS
Yuanyi XUE, *Polytechnic School of Engineering, New York University*
Yi ZHOU, *Polytechnic School of Engineering, New York University*
Yao WANG, *Polytechnic School of Engineering, New York University*

COM-P5.4 – INTER-PICTURE PREDICTION BASED ON 3D POINT CLOUD MODEL
Tong SHAO, *University of Science and Technology of China*
Dong LIU, *University of Science and Technology of China*
Houqiang LI, *University of Science and Technology of China*

★ **COM-P5.5 –** TRANSFORMS FOR INTRA PREDICTION RESIDUALS BASED ON PREDICTION INACCURACY MODELING
Xun CAI, *Massachusetts Institute of Technology*
Jae LIM, *Massachusetts Institute of Technology*

★ **COM-P5.6 –** ASYMPTOTIC CLOSED-LOOP DESIGN FOR TRANSFORM DOMAIN TEMPORAL PREDICTION
Shunyao LI, *University of California, Santa Barbara*
Tejaswi NANJUNDASWAMY, *University of California, Santa Barbara*
Yue CHEN, *University of California, Santa Barbara*
Kenneth ROSE, *University of California, Santa Barbara*

COM-P10: Video Coding III

Wednesday, 14:00-16:00
POSTER
Room: **POSTER 0**

Session Chair(s): Onur GULERYUZ, *LG Electronics*

COM-P10.1 – EFFICIENT SCALABLE COMPRESSION OF SPARSELY SAMPLED IMAGES
Colas SCHRETTER, *Vrije Universiteit Brussel*
David BLINDER, *Vrije Universiteit Brussel*
Tim BRUYLANTS, *Vrije Universiteit Brussel*
Peter SCHELKENS, *Vrije Universiteit Brussel*
Adrian MUNTEANU, *Vrije Universiteit Brussel*

COM-P10.2 – MOTION VECTOR FIELDS BASED VIDEO CODING
Amin ZHENG, *Hong Kong University of Science and Technology*
Yuan YUAN, *Hong Kong University of Science and Technology*
Hong ZHANG, *Huawei Technologies Co., Ltd*
Haitao YANG, *Huawei Technologies Co., Ltd*
Pengfei WAN, *Hong Kong University of Science and Technology*
Oscar C. AU, *Hong Kong University of Science and Technology*

COM-P10.3 – MOTION ESTIMATION AND COMPENSATION FOR FISHEYE WARPED VIDEO
Guoxin JIN, *Northwestern University*
Ankur SAXENA, *Samsung Research America*
Madhukar BUDAGAVI, *Samsung Research America*

★ **COM-P10.4 –** TEMPLATE BASED INTER-LAYER PREDICTION FOR HIGH DYNAMIC RANGE SCALABLE COMPRESSION
Mikael LE PENDU, *Technicolor*
Guillemot CHRISTINE, *INRIA*
Dominique THOREAU, *Technicolor*

COM-P10.5 – LOW-COMPLEXITY SEPARABLE MULTIPLIER-LESS LOOP FILTER FOR VIDEO CODING
Ankur SAXENA, *Samsung Research America*
Mohammed AABED, *Georgia Institute of Technology*
Madhukar BUDAGAVI, *Samsung Research America*

COM-P10.6 – A COMPUTATIONAL MODEL FOR PREDICTING LOCAL DISTORTION VISIBILITY VIA CONVOLUTIONAL NEURAL NETWORK TRAINED ON NATURAL SCENES
Md Mushfiqul ALAM, *Oklahoma State University*
Pranita PATIL, *Oklahoma State University*
Martin HAGAN, *Oklahoma State University*
Damon CHANDLER, *Oklahoma State University*

ELI-O3: 3D Visual Quality

Wednesday, 14:00-16:00
LECTURE
Room: **205A**
Session Chair(s): Touradj EBRAHIMI, *EPFL*

14:00 ELI-O3.1 – A MAJORIZE-MINIMIZE APPROACH FOR HIGH-QUALITY DEPTH UPSAMPLING
Youngjung KIM, *Yonsei University*
Sunghwan CHOI, *Yonsei University*
Changjae OH, *Yonsei University*
Kwanghoon SOHN, *Yonsei University*

14:20 ELI-O3.2 – POST INSERTED OBJECT CALIBRATION FOR STEREO VIDEO RECTIFICATION
Weiming LI, *Samsung R&D Institute China-Beijing*
Zhihua LIU, *Samsung R&D Institute China-Beijing*
Kang XUE, *Samsung R&D Institute China-Beijing*
Yangho CHO, *Samsung Advanced Institute of Technology (SAIT)*
Xiying WANG, *Samsung R&D Institute China-Beijing*
Gengyu MA, *Samsung R&D Institute China-Beijing*
Haitao WANG, *Samsung R&D Institute China-Beijing*

14:40 ELI-O3.3 – TEMPORALLY CONSISTENT HOLE FILLING METHOD BASED ON GLOBAL OPTIMIZATION WITH LABEL PROPAGATION FOR 3D VIDEO
Hak Gu KIM, *Korea Advanced Institute of Science and Technology (KAIST)*
Soo Sung YOON, *Korea Advanced Institute of Science and Technology (KAIST)*
Yong Man RO, *Korea Advanced Institute of Science and Technology (KAIST)*

15:00 ELI-O3.4 – UPSAMPLING THE DEPTH MAP WITH ITS OWN PROPERTIES
Wei LIU, *Shanghai Jiao Tong University*
Penglin LI, *Shanghai Jiao Tong University*
Jie YANG, *Shanghai Jiao Tong University*
Pengfei SHI, *Shanghai Jiao Tong University*

15:20 ELI-O3.5 – VISUAL COMFORT ASSESSMENT FOR STEREOSCOPIC 3D IMAGES BASED ON SALIENT DISCOMFORT REGIONS
Cheolkon JUNG, *Xidian University*
Hongmin LIU, *Xidian University*

ELI-P7: Infrared, Multispectral and Hyperspectral imaging

Wednesday, 14:00-16:00
POSTER Room: **POSTER K**

Session Chair(s): Gaurav SHARMA, *University of Rochester*

ELI-P7.1 – LGHD: A FEATURE DESCRIPTOR FOR MATCHING ACROSS NON-LINEAR INTENSITY VARIATIONS
Cristhian AGUILERA, *Autonomous University of Barcelona*
Angel SAPPA, *Autonomous University of Barcelona*
Ricardo TOLEDO, *Autonomous University of Barcelona*

ELI-P7.2 – GENERALIZED INPAINTING METHOD FOR HYPERSPECTRAL IMAGE ACQUISITION
Kévin DEGRAUX, *Université catholique de Louvain*
Valerio CAMBARERI, *University of Bologna*
Laurent JACQUES, *Université catholique de Louvain*
Bert GEELEN, *IMEC*
Carolina BLANCH, *IMEC*
Gauthier LAFRUIT, *IMEC and Université Libre de Bruxelles*

ELI-P7.3 – AN $\ELL_{1/2}$ REGULARIZED LOW-RANK REPRESENTATION FOR HYPERSPECTRAL IMAGERY CLASSIFICATION
Sen JIA, *College of Computer Science and Software Engineering, Shenzhen University*
Xiujun ZHANG, *College of Information Engineering, Shenzhen University*
Lin DENG, *College of Information Engineering, Shenzhen University*
Shu ZHENQIU, *School of Computer Science and Engineering, Nanjing University of Science and Technology*

ELI-P7.4 – DUAL-ARM VIS/NIR COMPRESSIVE SPECTRAL IMAGER
Hoover RUEDA, *University of Delaware*
Henry ARGUELLO, *Universidad Industrial de Santander*
Gonzalo R. ARCE, *University of Delaware*

ELI-P7.5 – SINGLE-SHOT FOURIER TRANSFORM MULTISPECTROSCOPY
Jie JIA, *University of Dayton*
Keigo HIRAKAWA, *University of Dayton*

★ **ELI-P7.6 –** LOW-RANK TENSOR DECOMPOSITION BASED ANOMALY DETECTION FOR HYPERSPECTRAL IMAGERY
Shuangjiang LI, *The University of Tennessee*
Wei WANG, *The University of Tennessee*
Hairong QI, *The University of Tennessee*
Bulent AYHAN, *Signal Processing Inc.*
Chiman KWAN, *Signal Processing Inc.*
Steven STEVEN VANCE, *Jet Propulsion Laboratory*

ELI-P8: Multiview Image Processing

Wednesday, 14:00-16:00
POSTER Room: **POSTER M**

Session Chair(s): Atanas GOTCHEV, *Tampere University of Technology*

ELI-P8.1 – ROBUST VIDEO STITCHING USING ADAPTIVE PIXEL TRANSFER
Kyu-Yul LEE, *Ulsan National Institute of Science and Technology*
Jae-Young SIM, *Ulsan National Institute of Science and Technology*

ELI-P8.2 – IMAGE BASED RENDERING TECHNIQUE VIA SPARSE REPRESENTATION IN SHEARLET DOMAIN
Suren VAGHARSHAKYAN, *Tampere University of Technology*
Robert BREGOVIC, *Tampere University of Technology*
Atanas GOTCHEV, *Tampere University of Technology*

ELI-P8.3 – GRAPH MODELLING OF 3D GEOMETRIC INFORMATION FOR COLOR CONSISTENCY OF MULTIVIEW IMAGES
Manohar KUSE, *The Hong Kong University of Science and Technology*
Sunil Prasad JAISWAL, *The Hong Kong University of Science and Technology*

ELI-P8.4 – PROGRESSIVE FEATURE MATCHING VIA TRIPLET GRAPH
Chuan YU, *Tsinghua University*
Lu TIAN, *Tsinghua University*
Han HU, *Tsinghua University*
Yueqi DUAN, *Tsinghua University*
Jie ZHOU, *Tsinghua University*

ELI-P8.5 – THERMOGRAPHY SPATIAL RESOLUTION ENHANCEMENT BY NON-RIGID REGISTRATION WITH VISIBLE IMAGERY
Gerald MWANGI, *University of Heidelberg*
Paul FIEGUTH, *University of Waterloo, Canada*
Christoph S. GARBE, *University of Heidelberg*

ELI-P8.6 – INTERACTIVE MULTIVIEW VIDEO SCHEDULING THROUGH BARGAINING
Weiliang XU, *Shanghai University*
Junni ZOU, *Shanghai University*
Hongkai XIONG, *Shanghai Jiao Tong University*

ELI-P9: Stereo Image Processing

Wednesday, 14:00-16:00
POSTER
Room: **POSTER L**

Session Chair(s): A. Aydin ALATAN, *Middle East Techincal University*

★ **ELI-P9.1 –** BI-DCT: DCT-BASED LOCAL BINARY DESCRIPTOR FOR DENSE STEREO MATCHING
Sujung KIM, *KAIST*
Kyunghyung PAENG, *KAIST*
Ja-Won SEO, *KAIST*
Seong Dae KIM, *KAIST*

ELI-P9.2 – MULTI-CAMERA INTERFERENCE CANCELLATION OF TIME-OF-FLIGHT (TOF) CAMERAS
Lianhua LI, *Huazhong University of Science & Technology*
Sen XIANG, *Huazhong University of Science & Technology*
You YANG, *Huazhong University of Science & Technology*
Li YU, *Huazhong University of Science & Technology*

ELI-P9.3 – HIGH-ORDER REGULARIZATION FOR STEREO COLOR EDITING
Kuo-Chin LIEN, *UCSB*
Jerry GIBSON, *UCSB*
Matthew TURK, *UCSB*

ELI-P9.4 – STAIR DETECTION AND TRACKING FROM EGOCENTRIC STEREO VISION
Tobias SCHWARZE, *Karlsruhe Institute of Technology*
Zhichao ZHONG, *Centrum Wiskunde & Informatica*

ELI-P9.5 – SPARSE RECURSIVE FILTERING FOR O(1) STEREO MATCHING
Yeti Ziya GÜRBÜZ, *Middle East Techincal University*
Cevahir CIGLA, *ASELSAN Inc.*
A. Aydin ALATAN, *Middle East Techincal University*

IFS-P4: Social and Affective Media

Wednesday, 14:00-16:00
POSTER
Room: **POSTER J**

Session Chair(s): Gwenaël DOËRR, *Technicolor R&D*

IFS-P4.1 – PREDICTING DISCRETE PROBABILITY DISTRIBUTION OF IMAGE EMOTIONS
Sicheng ZHAO, *Harbin Institute of Technology*
Hongxun YAO, *Harbin Institute of Technology*
Xiaolei JIANG, *Harbin Institute of Technology*
Xiaoshuai SUN, *Harbin Institute of Technology*

★ **IFS-P4.2 –** FACIAL EXPRESSION RECOGNITION IN THE WILD USING RICH DEEP FEATURES
Abubakrelsedik KARALI, *Siemens*
Ahmad BASSIOUNY, *AUC*
Motaz EL-SABAN, *Microsoft*

IFS-P4.3 – CREATING DESCRIPTIVE VISUAL WORDS FOR TAG RANKING OF COMPRESSED SOCIAL IMAGE
Xin LIU, *Signal and Information Processing Laboratory, Beijing University of Technology*
Jing ZHANG, *Signal and Information Processing Laboratory, Beijing University of Technology*
Li ZHUO, *Signal and Information Processing Laboratory, Beijing University of Technology*
Ying YANG, *Signal and Information Processing Laboratory, Beijing University of Technology*

IFS-P4.4 – LEARNING DEEP FEATURES FOR IMAGE EMOTION CLASSIFICATION
Ming CHEN, *Purdue University*
Lu ZHANG, *Purdue University*
Jan ALLEBACH, *Purdue University*

SMR-O5: Omnidirectional imaging and Plenoptics

Wednesday, 14:00-16:00
LECTURE
Room: **202**

Session Chair(s): Ivana TOSIC, *Ricoh Innovations Corp.*

14:00 ★ **SMR-O5.1 –** ONLINE VIEW SAMPLING FOR ESTIMATING DEPTH FROM LIGHT FIELDS
Changil KIM, *Disney Research Zurich / ETH Zurich*
Kartic SUBR, *Disney Research Zurich*
Kenny MITCHELL, *Disney Research Zurich*
Alexander SORKINE-HORNUNG, *Disney Research Zurich*
Markus GROSS, *Disney Research Zurich / ETH Zurich*

14:20 ★ SMR-O5.2 – PARALLAX RECTIFICATION FOR SPECTRALLY-CODED PLENOPTIC CAMERAS
Lingfei MENG, *Ricoh Innovations, Corp.*
Kathrin BERKNER, *Ricoh Innovations, Corp.*

14:40 SMR-O5.3 – DEPTH AND ANGULAR RESOLUTION IN PLENOPTIC CAMERAS
Mitra DAMGHANIAN, *Mid Sweden University*
Roger OLSSON, *Mid Sweden University*
Mårten SJÖSTRÖM, *Mid Sweden University*

15:00 ★ SMR-O5.4 – GENERALIZED SOBEL FILTERS FOR GRADIENT ESTIMATION OF DISTORTED IMAGES
Antonino FURNARI, *University of Catania*
Giovanni M. FARINELLA, *University of Catania*
Arcangelo R. BRUNA, *STMicroelectronics*
Sebastiano BATTIATO, *University of Catania*

15:20 SMR-O5.5 – A MULTI-RESOLUTION APPROACH TO DEPTH FIELD ESTIMATION IN DENSE IMAGE ARRAYS
Alessandro NERI, *Università degli Studi Roma TRE*
Marco CARLI, *Università degli Studi Roma TRE*
Federica BATTISTI, *Università degli Studi Roma TRE*

15:40 SMR-O5.6 – LENSELET IMAGE COMPRESSION SCHEME BASED ON SUBAPERTURE IMAGES STREAMING
Feng DAI, *Institute of Computing Technology, Chinese Academy of Sciences*
Jun ZHANG, *Institute of Computing Technology, Chinese Academy of Sciences*
Yongdong ZHANG, *Institute of Computing Technology, Chinese Academy of Sciences*
Yike MA, *Institute of Computing Technology, Chinese Academy of Sciences*

SMR-P8: Sparse Representations and Applications

Wednesday, 14:00-16:00
POSTER
Room: **POSTER H**

Session Chair(s): Eduardo A.B. DA SILVA, *Universidade Federal do Rio de Janeiro*

SMR-P8.1 – EXTERNAL AND INTERNAL LEARNING FOR SINGLE-IMAGE SUPER-RESOLUTION
Shuang WANG, *Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education*
Shaopeng LIN, *Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education*
Xuefeng LIANG, *IST, Graduate School of Informatics, Kyoto University*
Bo YUE, *Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education*
Licheng JIAO, *Key Laboratory of Intelligent Perception and Image Understanding of Ministry of Education*

SMR-P8.2 – TRANSLATIONAL AND ROTATIONAL JITTER INVARIANT INCREMENTAL PRINCIPAL COMPONENT PURSUIT FOR VIDEO BACKGROUND MODELING
Paul RODRIGUEZ, *Pontificia Universidad Católica del Perú*
Brendt WOHLBERG, *Los Alamos National Laboratory*

SMR-P8.3 – A SAMPLE SET PERSPECTIVE ON THE CLASSIFICATION OF HYPERSPECTRAL IMAGE WITH WEIGHTED AFFINE CONSTRAINT
Ding NI, *Department of Electronic Engineering, Tsinghua University*
Hongbing MA, *Department of Electronic Engineering, Tsinghua University*

SMR-P8.4 – IMAGE SUPER-RESOLUTION BASED ON DICTIONARY LEARNING AND ANCHORED NEIGHBORHOOD REGRESSION WITH MUTUAL INCOHERENCE
Yulun ZHANG, *Tsinghua University*
Kaiyu GU, *Ningbo Vision 3D Display Technology Co., Ltd*
Yongbing ZHANG, *Tsinghua University*
Jian ZHANG, *Peking University*
Qionghai DAI, *Tsinghua University*

SMR-P8.5 – BI-SPARSITY PURSUIT FOR ROBUST SUBSPACE RECOVERY
Xiao BIAN, *North Carolina State University*
Hamid KRIM, *North Carolina State Univ.*

SMR-P8.6 – LEARNING THE DISCRIMINATIVE DICTIONARY FOR SPARSE REPRESENTATION BY A GENERAL FISHER REGULARIZED MODEL
Qingfeng LIU, *New Jersey Institute of Technology*
Ajit PUTHENPUTHUSSERY, *New Jersey Institute of Technology*
Chengjun LIU, *New Jersey Institute of Technology*

SNT-S8: Show & Tell VIII

Wednesday, 14:00-16:00
SHOW & TELL
Room: **SHOW & TELL**

Session Chair(s): Fabrice LABEAU, *McGill University*

SNT-S8.1 – A NOVEL CONTINUOUS AUTOFOCUS TECHNIQUE
Homer CHEN, *National Taiwan University*
Dong-chen TSAI, *National Taiwan University*
This session will demonstrate a fast and accurate continuous autofocus technique with minimal bouncing and overshoot for shooting videos of moving objects. This technique has been successfully applied to surveillance, consumer, smartphone, and digital cinema cameras.

SNT-S8.2 – A REAL-TIME ACTION RECOGNITION SYSTEM USING DEPTH AND INERTIAL SENSOR FUSION
Chen CHEN, *University of Texas at Dallas*
Nasser KEHTARNAVAZ, *University of Texas at Dallas*
This demonstration presents a human action recognition system that runs in real-time and uses a combination of a depth camera and an inertial sensor simultaneously. Computationally efficient depth image features and inertial signals features are fed into two computationally efficient collaborative representative classifiers. A decision-level fusion is then performed. The demonstration consists of a subject-specific training for say three hand actions followed by a real-time testing or operation. Attendees are asked to stand in front of the camera and perform say two or three hand actions to train the system. Then they will be asked to perform the same actions in random order to see whether the actions are recognized.

SNT-S8.3 – SENSORY GAP: WHY YOU SHOULDN'T OVERLOOK IT
Reza BAHMANYAR, *Institute of Remote Sensing Technology (IMF), German Aerospace Center (DLR)*
Ambar MURILLO MONTES DE OCA, *Institute of Remote Sensing Technology (IMF), German Aerospace Center (DLR)*
This Show & Tell session will begin by introducing the sensory and semantic gap. The sensory gap will then be the focus, and its causes (e.g., resolution, perspective, scale, field of view) will be highlighted with a visual demonstration. This will be followed by a quick experiment involving the audience, and results will be processed in real time, with the purpose of visually quantifying and demonstrating the sensory gap. Concluding the Show & Tell session will be a section concentrating on why the sensory gap is important to consider for practical applications, such as annotation tools, and image learning and mining systems

SNT-S8.4 – APPLICATIONS OF HISTOGRAM OF GRADIENT MAGNITUDES
Monika SHARMA, *TCS Innovation Labs*
Hiranmay GHOSH, *TCS Innovation Labs*
We would demonstrate the applications of our proposed descriptor, Histogram of Gradient Magnitudes, in the field of computer vision, including Infrastructure planning like finding out the best location for establishing a new school in a city and Telecom Equipment Localisation in a collection of street view images.

SS5-O1: Privacy and Security in the New Generation Video Coding Systems

Wednesday, 14:00-16:00
LECTURE Room: **205B**
Session Chair(s): Wassim HAMIDOUCHE, *IETR INSA Rennes*
William PUECH, *Université de Montellier*

14:00 SS5-O1.1 – HEVC VIDEO AUTHENTICATION USING DATA EMBEDDING TECHNIQUE
Yiqi TEW, *UNIVERSITY OF MALAYA*
Koksheik WONG, *UNIVERSITY OF MALAYA*
Raphael C.-W. PHAN, *MULTIMEDIA UNIVERSITY*

14:20 SS5-O1.2 – AUTO-SYNCHRONIZED SELECTIVE ENCRYPTION OF VIDEO CONTENTS FOR AN IMPROVED TRANSMISSION ROBUSTNESS OVER ERROR-PRONE CHANNELS
Benoit BOYADJIS, *Thales communications and security*
Cyril BERGERON, *Thales communications and security*
Sébastien LECOMTE, *Thales communications and security*

14:40 SS5-O1.3 – ROI ENCRYPTION FOR THE HEVC CODED VIDEO CONTENTS
Mousa FARADJALLAH, *IETR Lab / Polytech Nantes*
Wassim HAMIDOUCHE, *IETR Lab / INSA de Rennes*

15:00 SS5-O1.4 – OUT-OF-THE-LOOP INFORMATION HIDING FOR HEVC VIDEO
Luong PHAM VAN, *Ghent University - iMinds - Multimedia Lab*
Johan DE PRAETER, *Ghent University - iMinds - Multimedia Lab, Ghent, Belgium*
Glenn VAN WALLENDAEL, *Ghent University - iMinds - Multimedia Lab, Ghent*
Jan DE COCK, *Ghent University - iMinds - Multimedia Lab*
Rik VAN DE WALLE, *Ghent University - iMinds - Multimedia Lab*

15:20 **SS5-O1.5 –** ENCRYPTING ONLY AC COEFFICIENT SIGNS CONSIDERED HARMFUL
Heinz HOFBAUER, *University of Salzburg*
Andreas UNTERWEGER, *University of Salzburg*
Andreas UHL, *University of Salzburg*

TEC-O5: Image Superresolution

Wednesday, 14:00-16:00
LECTURE
Room: **204A**
Session Chair(s): Christine GUILLEMOT, *INRIA*

14:00 **TEC-O5.1 –** MISSING DATA SUPER-RESOLUTION USING NON-LOCAL AND STATISTICAL PRIORS
Ronan FABLET, *Institut Mines-Télécom/Télécom Bretagne*
Francois ROUSSEAU, *Institut Mines-Télécom/Télécom Bretagne*

14:20 **TEC-O5.2 –** IMAGE RESOLUTION ENHANCEMENT BASED ON NOVEL VIEW SYNTHESIS
Yusuke HAYASHI, *Graduate School of Information Science Nara Institute of Science Technology*
Norihiko KAWAI, *Graduate School of Information Science Nara Institute of Science Technology*
Tomokazu SATO, *Graduate School of Information Science Nara Institute of Science Technology*
Naokazu YOKOYA, *Graduate School of Information Science Nara Institute of Science Technology*

14:40 **TEC-O5.3 –** REGULARIZED SINGLE-IMAGE SUPER-RESOLUTION BASED ON PROGRESSIVE GRADIENT ESTIMATION
Lejun YU, *College of Information Science and Technology, Beijing Normal University*
Xiaoyu WU, *College of Information Science and Technology, Beijing Normal University*
Fengxiang GE, *College of Information Science and Technology, Beijing Normal University*
Bo SUN, *College of Information Science and Technology, Beijing Normal University*
Jun HE, *College of Information Science and Technology, Beijing Normal University*
Robert SABLATNIG, *Vienna University of Technology*

15:00 **TEC-O5.4 –** SINGLE IMAGE SUPER-RESOLUTION BASED ON SELF-EXAMPLES USING CONTEXT-DEPENDENT SUBPATCHES
Jae-Seok CHOI, *Korea Advanced Institute of Science and Technology*
Sung-Ho BAE, *Korea Advanced Institute of Science and Technology*
Munchurl KIM, *Korea Advanced Institute of Science and Technology*

15:20 **TEC-O5.5 –** SPARSITY-BASED DEPTH IMAGE RESTORATION USING SURFACE PRIORS AND RGB-D CORRELATIONS
Xiaowei DENG, *McMaster University*
Xiaolin WU, *McMaster University*

15:40 **TEC-O5.6 –** UHD IMAGE RECONSTRUCTION BY ESTIMATING INTERPOLATION ERROR
Kai BERGER, *Inria, Rennes Bretagne-Atlantique*
Kongfeng BERGER, *IRCCyN UMR CNRS 6597*
Patrick LE CALLET, *IRCCyN UMR CNRS 6597*

TEC-P11: Image Registration, Fusion and Mosaicking I

Wednesday, 14:00-16:00
POSTER Room: **POSTER F**

Session Chair(s): Alin ACHIM, *University of Bristol*

TEC-P11.1 – UNIFIED IMAGE FUSION BASED ON APPLICATION-ADAPTIVE IMPORTANCE MEASURE
Takashi SHIBATA, *NEC Corporation*
Masayuki TANAKA, *Tokyo Institute of Technology*
Masatoshi OKUTOMI, *Tokyo Institute of Technology*

TEC-P11.2 – L_1-FUSION: ROBUST LINEAR-TIME IMAGE RECOVERY FROM FEW SEVERELY CORRUPTED COPIES
Panos MARKOPOULOS, *University at Buffalo, The State University of New York*
Sandipan KUNDU, *University at Buffalo, The State University of New York*
Dimitris PADOS, *University at Buffalo, The State University of New York*

★ **TEC-P11.3 –** MULTI-EXPOSURE IMAGE FUSION: A PATCH-WISE APPROACH
Kede MA, *Dept. of Electrical and Computer Engineering, The University of Waterloo*
Zhou WANG, *Dept. of Electrical and Computer Engineering, The University of Waterloo*

TEC-P11.4 – EDGE MODEL BASED FUSION OF MULTI-FOCUS IMAGES USING MATTING METHOD
Yibo CHEN, *The Chinese University of Hong Kong*
Wai-Kuen CHAM, *The Chinese University of Hong Kong*

TEC-P11.5 – MULTIFOCUS IMAGE FUSION BASED ON SURFACE AREA ANALYSIS
Iman ROOSTA, *Isfahan University of Technology*
Nader KARIMI, *Isfahan University of Technology*
Shadrokh SAMAVI, *Isfahan University of Technology,McMaster University*
Shahram SHIRANI, *McMaster University*

TEC-P11.6 – NON-PARAMETRIC ENSEMBLE KALMAN METHODS FOR THE INPAINTING OF NOISY DYNAMIC TEXTURES
Redouane LGUENSAT, *Telecom Bretagne*
Pierre TANDEO, *Telecom Bretagne*
Ronan FABLET, *Telecom Bretagne*
Pierre AILLIOT, *University of Brest*

TEC-P29: Image Registration, Fusion and Mosaicking II

Wednesday, 14:00-16:00
POSTER Room: **POSTER G**

Session Chair(s): Alin ACHIM, *University of Bristol*

TEC-P29.1 – A CONTRARIO PATCH MATCHING, WITH APPLICATION TO KEYPOINT MATCHES VALIDATION
Rafael GROMPONE VON GIOI, *ENS Cachan*
Viorica PATRAUCEAN, *University of Cambridge*

★ **TEC-P29.2 –** LINE MEETS AS-PROJECTIVE-AS-POSSIBLE IMAGE STITCHING WITH MOVING DLT
Kyungdon JOO, *Korea Advanced Institute of Science and Technology (KAIST)*
Namil KIM, *Korea Advanced Institute of Science and Technology (KAIST)*
Tae-Hyun OH, *Korea Advanced Institute of Science and Technology (KAIST)*
In So KWEON, *Korea Advanced Institute of Science and Technology (KAIST)*

★ **TEC-P29.3 –** COERCIVE REGION-LEVEL REGISTRATION FOR MULTI-MODAL IMAGES
Yu-Hui CHEN, *University of Michigan, Ann Arbor*
Dennis WEI, *IBM Watson Research Center*
Gregory NEWSTADT, *Google Inc.*
Jeffrey SIMMONS, *US Air Force Research Laboratory*
Alfred HERO, *University of Michigan, Ann Arbor*

TEC-P29.4 – A NEW GLOBAL CONSISTENCE METHOD FOR MOSAICING OF AERIAL IMAGES
Menghan XIA, *Wuhan University*
Jian YAO, *Wuhan University*
Li LI, *Wuhan University*
Xiaohu LU, *Wuhan University*

TEC-P29.5 – FAST AFFINE-INVARIANT IMAGE MATCHING BASED ON BHATTACHARYYA DISTANCE AND ADAPTIVE TREE
Jongin SON, *Yonsei University*
Seungryong KIM, *Yonsei University*
Kwanghoon SOHN, *Yonsei University*

TEC-P7: Hystocytological Feature Extraction and Classification

Wednesday, 14:00-16:00
POSTER Room: **POSTER E**
Session Chair(s): Smriti BHANDARI, *Walchand College of Engineering*

★ **TEC-P7.1 –** ENCODING ROTATION INVARIANT FEATURES IN HEP-2 CELL CLASSIFICATION
Xiang XU, *Nanyang Technological University*
Feng LIN, *Nanyang Technological University*
Carol NG, *Tan Tock Seng Hospital*
Khai Pang LEONG, *Tan Tock Seng Hospital*

★ **TEC-P7.2 –** AUTOMATIC DETECTION OF NECROSIS, NORMOXIA AND HYPOXIA IN TUMORS FROM MULTIMODAL CYTOLOGICAL IMAGES
Gustavo CARNEIRO, *The University of Adelaide*
Tingying PENG, *Technical University of Munich*
Christine BAYER, *Technical University of Munich*
Nassir NAVAB, *Technical University of Munich*

TEC-P7.3 – LEARNING HISTOPATHOLOGICAL REGIONS OF INTEREST BY FUSING BOTTOM-UP AND TOP-DOWN INFORMATION
Germán CORREDOR, *Universidad Nacional de Colombia*
Eduardo ROMERO, *Universidad Nacional de Colombia*

TEC-P7.4 – THE MEASUREMENT OF CELL VIABILITY BASED ON TEMPORAL BAG OF WORDS FOR IMAGE SEQUENCES
Fengqian PANG, *Beijing Institute of Technology*
Zhiwen LIU, *Beijing Institute of Technology*
Heng LI, *Beijing Institute of Technology*
Yonggang SHI, *Beijing Institute of Technology*

TEC-P7.5 – A BAG-OF-FEATURES APPROACH FOR MALIGNANCY DETECTION IN BREAST HISTOPATHOLOGY IMAGES
Smriti BHANDARI, *Walchand College of Engineering*

ARS-O11: Learning-based Visual Applications

Wednesday, 16:30-18:30
LECTURE Room: **205A**
Session Chair(s): Xiangwei KONG, *Dalian Univesity of Technology*

16:30 ARS-O11.1 – MULTIPLE DICTIONARIES SPARSE CODING FOR PEDESTRIAN DETECTION
Yazhou LIU, *Nanjing University of Science and Technology*
Pongsak LASANG, *Panasonic R&D Center Singapore*
Mel SIEGEL, *Carnegie Mellon University*
Quansen SUN, *Nanjing University of Science and Technology*

16:50 ARS-O11.2 – MULTITHREADING ADABOOST FRAMEWORK FOR OBJECT RECOGNITION
Jinhui CHEN, *Kobe University*
Tetsuya TAKIGUCHI, *Kobe University*
Yasuo ARIKI, *Kobe University*

17:10 ARS-O11.3 – NOVEL GENERAL KNN CLASSIFIER AND GENERAL NEAREST MEAN CLASSIFIER FOR VISUAL CLASSIFICATION
Qingfeng LIU, *New Jersey Institute of Technology*
Ajit PUTHENPUTHUSSERY, *New Jersey Institute of Technology*
Chengjun LIU, *New Jersey Institute of Technology*

17:30 ARS-O11.4 – BEYOND LOCAL PHASE QUANTIZATION: MID-LEVEL BLURRED IMAGE REPRESENTATION USING FISHER VECTOR
Mengyu ZHU, *Huazhong University of Science and Technology*
Zhiguo CAO, *Huazhong University of Science and Technology*
Yang XIAO, *Huazhong University of Science and Technology*
Xiaokang XIE, *Huazhong University of Science and Technology*

17:50 ARS-O11.5 – IMPROVED CLUSTER CENTER ADAPTION FOR IMAGE CLASSIFICATION
Mingmin ZHEN, *Peking University*
Wenmin WANG, *Peking University*

18:10 ARS-O11.6 – FEATURE EXTRACTION VIA MULTI-VIEW NON-NEGATIVE MATRIX FACTORIZATION WITH LOCAL GRAPH REGULARIZATION
Zhenfan WANG, *Dalian University of Technology*
Xiangwei KONG, *Dalian University of Technology*
Haiyan FU, *Dalian University of Technology*
Ming LI, *Dalian University of Technology*
Yujia ZHANG, *Fordham University*

ARS-O18: Superpixel Segmentation

Wednesday, 16:30-18:30
LECTURE
Room: **204B**
Session Chair(s): A. Aydin ALATAN, *Middle East Techincal University*

16:30 **ARS-O18.1 –** WATERSHED SUPERPIXEL
Zhongwen HU, *Shenzhen University*
Qin ZOU, *Wuhan University*
Qingquan LI, *Shenzhen University*

16:50 **ARS-O18.2 –** FAST LABEL PROPAGATION FOR REAL-TIME SUPERPIXELS FOR VIDEO CONTENT
Matthias RESO, *Leibniz Universität Hannover*
Jörn JACHALSKY, *Technicolor Research & Innovation*
Bodo ROSENHAHN, *Leibniz Universität Hannover*
Jörn OSTERMANN, *Leibniz Universität Hannover*

17:10 **ARS-O18.3 –** UNSUPERVISED SEGMENTATION USING DYNAMIC SUPERPIXEL RANDOM WALKS
Christian DESROSIERS, *École de technologie supérieure*

17:30 ★ **ARS-O18.4 –** A FAST METHOD FOR INFERRING HIGH-QUALITY SIMPLY-CONNECTED SUPERPIXELS
Oren FREIFELD, *MIT*
Yixin LI, *MIT*
John FISHER III, *MIT*

17:50 **ARS-O18.5 –** LASP: LOCAL ADAPTIVE SUPER-PIXELS
Kutalmis Gokalp INCE, *Middle East Technical University, ASELSAN INC.*
Cevahir CIGLA, *ASELSAN Inc.*
A. Aydin ALATAN, *Middle East Technical University, ASELSAN Inc.*

18:10 **ARS-O18.6 –** NSLIC: SLIC SUPERPIXELS BASED ON NONSTATIONARITY MEASURE
Shaoyong JIA, *Institue of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Shijie GENG, *Institue of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Yun GU, *Institue of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Yu QIAO, *Institue of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Jie YANG, *Institue of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*
Pengfei SHI, *Institue of Image Processing and Pattern Recognition, Shanghai Jiao Tong University*

ARS-O22: Pose Estimation and Human Activity Recognition

Wednesday, 16:30-18:30
LECTURE Room: **202**
Session Chair(s): Kalpathi RAMAKRISHNAN, *Indian Institute of Science*

16:30 ★ **ARS-O22.1 –** UTD-MAD: A MULTIMODAL DATASET FOR HUMAN ACTION RECOGNITION UTILIZING A DEPTH CAMERA AND A WEARABLE INERTIAL SENSOR
Chen CHEN, *University of Texas at Dallas*
Roozbeh JAFARI, *University of Texas at Dallas*
Nasser KEHTARNAVAZ, *University of Texas at Dallas*

16:50 **ARS-O22.2 –** ONLINE PERSON ORIENTATION ESTIMATION BASED ON CLASSIFIER UPDATE
Hong LIU, *Shenzhen Graduate School, Peking University*
Liqian MA, *Shenzhen Graduate School, Peking University*

17:10 **ARS-O22.3 –** REAL-TIME UPPER BODY POSE ESTIMATION FROM DEPTH IMAGES
Ming-Han TSAI, *National Chiao Tung University*
Kuan-Hua CHEN, *National Chiao Tung University*
I-Chen LIN, *National Chiao Tung University*

17:30 **ARS-O22.4 –** HUMAN ACTIVITY RECOGNITION BASED ON POSE POINTS SELECTION
Ke XU, *Shanghai Jiao Tong University*
Xinghao JIANG, *Shanghai Jiao Tong University*
Tanfeng SUN, *Shanghai Jiao Tong University*

17:50 ★ **ARS-O22.5 –** MOTION RETRIEVAL USING CONSISTENCY OF EPIPOLAR GEOMETRY
Nazim ASHRAF, *FC College (A Chartered University)*
Hassan FOROOSH, *University of Central Florida*

18:10 **ARS-O22.6 –** ON THE UTILITY OF CANONICAL CORRELATION ANALYSIS FOR DOMAIN ADAPTATION IN MULTI-VIEW HEADPOSE ESTIMATION
Anoop RAJAGOPAL, *Indian Institute of Science*
Ramanathan SUBRAMANIAN, *Advanced Digital Sciences Center*
Vassilios VONIKAKIS, *Advanced Digital Sciences Center*
Kalpathi RAMAKRISHNAN, *Indian Institute of Science*
Stefan WINKLER, *Advanced Digital Sciences Center*

ARS-P16: Image Processing Applications I

Wednesday, 16:30-18:30
POSTER Room: **POSTER F**
Session Chair(s): Peter SCHELKENS, *Vrije Universiteit Brussel*

ARS-P16.1 – REAL TIME VEHICLE BACK-UP WARNING SYSTEM WITH SINGLE CAMERA
Jun CAO, *Intel Corp*
Yilin WANG, *School of Computing, Arizona State University*
Baoxin LI, *School of Computing, Arizona State University*

ARS-P16.2 – BELIEF-PROPAGATION-BASED ROBUST DECODING FOR TWO-DIMENSIONAL BARCODES TO OVERCOME DISTORTION AND OCCLUSION AND ITS EXTENSION TO MULTI-VIEW DECODING
Kohei KAMIZURU, *Kagoshima University*
Yudai KAWAKAMI, *Kagoshima University*
Hiroshi KAWASAKI, *Kagoshima University*
Satoshi ONO, *Kagoshima University*

ARS-P16.3 – APPLICATION OF IMAGE PROCESSING TECHNIQUES FOR FROG CALL CLASSIFICATION
Jie XIE, *Queensland University of Technology*
Michael TOWSEY, *Queensland University of Technology*
Jinglan ZHANG, *Queensland University of Technology*
Xueyan DONG, *Queensland University of Technology*
Paul ROE, *Queensland University of Technology*

ARS-P16.4 – CONSTRUCTION OF A BIRD IMAGE DATASET FOR ECOLOGICAL INVESTIGATIONS
Ryota YOSHIHASHI, *The University of Tokyo*
Rei KAWAKAMI, *The University of Tokyo*
Makoto IIDA, *The University of Tokyo*
Takeshi NAEMURA, *The University of Tokyo*

ARS-P16.5 – LOW-COST LICENSE PLATE DETECTION USING A CALIBRATED CAMERA
Henrique WEBER, *Federal University of Rio Grande do Sul*
Claudio Rosito JUNG, *Federal University of Rio Grande do Sul*

ARS-P2: Active Contours and Levelset Methods

Wednesday, 16:30-18:30
POSTER
Room: **POSTER D**

Session Chair(s): Vijayan K. ASARI, *University of Dayton*

ARS-P2.1 – EREL: EXTREMAL REGIONS OF EXTREMUM LEVELS
Mehdi FARAJI, *Kharazmi University*
Jamshid SHANBEHZADEH, *Kharazmi University*
Kamal NASROLLAHI, *Aalborg University*
Thomas B. MOESLUND, *Aalborg University*

ARS-P2.2 – ADAPTIVE REGULARIZATION LEVEL SET EVOLUTION FOR MEDICAL IMAGE SEGMENTATION AND BIAS FIELD CORRECTION
Xiaomeng XIN, *NLPR, Institute of Automation, Chinese Academy of Sciences*
Lingfeng WANG, *NLPR, Institute of Automation, Chinese Academy of Sciences*
Chunhong PAN, *NLPR, Institute of Automation, Chinese Academy of Sciences*
Shigang LIU, *School of Computer Science, Shaanxi Normal University*

ARS-P2.3 – A SELF-ORGANIZING LATTICE BOLTZMANN ACTIVE CONTOUR (SOLBAC) APPROACH FOR FAST AND ROBUST OBJECT REGION SEGMENTATION
Fatema ALBALOOSHI, *University of Dayton*
Vijayan K. ASARI, *University of Dayton*

ARS-P2.4 – SEGMENTING SIMILAR SHAPES VIA WEIGHTED GROUP-SIMILARITY ACTIVE CONTOURS
Peng LV, *Beijing Key Lab of Intelligent Information Technology*
Qingjie ZHAO, *Beijing Key Lab of Intelligent Information Technology*
Dongbing GU, *School of Computer Science and Electronic Engineering, University of Essex*

★ **ARS-P2.5 –** IMAGE SEGMENTATION USING CLIQUE BASED SHAPE PRIOR AND THE MUMFORD SHAH FUNCTIONAL
Fredrick PARK, *Whittier College*

ARS-P2.6 – A LEVEL SET-BASED FRAMEWORK FOR 3D KIDNEY SEGMENTATION FROM DIFFUSIONMR IMAGES
Mohamed SHEHATA, *University of Louisville*
Fahmi KHALIFA, *University of Louisville*
Ahmed SOLIMAN, *University of Louisville*
Rahaf ELREFAI, *University of Louisville*
Mohamed ABOU EL-GHAR, *University of Louisville*
Amy DWYER, *University of Louisville*
Rosemary OUSEPH, *University of Louisville*
Ayman EL-BAZ, *University of Louisville*

ARS-P33: Video Surveillance I

Wednesday, 16:30-18:30
POSTER
Room: **POSTER C**

Session Chair(s): Henri NICOLAS, *LaBRI*

ARS-P33.1 – HOW MUCH BANDWIDTH DOES SURVEILLANCE SYSTEM REQUIRE?
Zengmin XU, *Wuhan University*
Ruimin HU, *Wuhan University*
Jun CHEN, *Wuhan University*
Hongyang LI, *Wuhan University*
Huafeng CHEN, *Wuhan University*

ARS-P33.2 – A DISCRIMINATIVE TRACKLETS REPRESENTATION FOR CROWD ANALYSIS
Chongjing WANG, *Shanghai Jiao Tong University*
Zheng SHOU, *Shanghai Jiao Tong University*
Yi ZOU, *Shanghai Jiao Tong University*
Xu ZHAO, *Shanghai Jiao Tong University*
Yuncai LIU, *Shanghai Jiao Tong University*

ARS-P33.3 – ABANDONED OBJECT DETECTION USING OPERATOR-SPACE PURSUIT
Lucas THOMAZ, *Universidade Federal do Rio de Janeiro*
Allan DA SILVA, *Universidade Federal do Rio de Janeiro*
Eduardo A.B. DA SILVA, *Universidade Federal do Rio de Janeiro*
Sergio NETTO, *Universidade Federal do Rio de Janeiro*
Xiao BIAN, *North Carolina State University*
Hamid KRIM, *North Carolina State University*

ARS-P33.4 – OBJECT MODELING AND TRAJECTORY ESTIMATIONS FOR TRAFFIC ANALYSIS
Henri NICOLAS, *University of Bordeaux*

ARS-P33.5 – OBJECT TRACKING VIA DENSE SIFT DESCRIPTORS AND LOW-RANK REPRESENTATION
Yong WANG, *Shenzhen Branch of Hisilicon Research Department, Hisilicon Technologies*
Haibo LIU, *Shenzhen Branch of Hisilicon Research Department, Hisilicon Technologies*
Shiqiang HU, *School of Aeronautics and Astronautics, Shanghai Jiao Tong University*

ARS-P33.6 – OBJECT TRACKING BASED ON HUBER LOSS FUNCTION
Yong WANG, *Shenzhen Branch of Hisilicon Research Department, Hisilicon Technologies*
Shandong WU, *Imaging Research Division, Department of Radiology, University of Pittsburgh*
Haibo LIU, *Shenzhen Branch of Hisilicon Research Department, Hisilicon Technologies*
Shiqiang HU, *School of Aeronautics and Astronautics, Shanghai Jiao Tong University*

ARS-P39: Video Surveillance II

Wednesday, 16:30-18:30
POSTER
Room: **POSTER B**
Session Chair(s): Henri NICOLAS, *LaBRI*

ARS-P39.1 – ANOMALY DETECTION IN CROWD SCENES VIA ONLINE ADAPTIVE ONE-CLASS SUPPORT VECTOR MACHINES
Hanhe LIN, *University of Otago*
Jeremiah DENG, *University of Otago*
Brendon WOODFORD, *University of Otago*

ARS-P39.2 – IS PEDESTRIAN DETECTION ROBUST FOR SURVEILLANCE?
Yuan YUAN, *Nanyang Technological University*
Yuming FANG, *Jiangxi University of Finance and Economics*
Weisi LIN, *Nanyang Technological University*

ARS-P39.3 – SEEING AS IT HAPPENS: REAL TIME 3D VIDEO EVENT VISUALIZATION
Yueming YANG, *University at Albany, State University of New York*
Ming-Ching CHANG, *GE Global Research*
Peter TU, *GE Global Research*
Siwei LYU, *University at Albany, State University of New York*

ARS-P39.4 – A PARTICLE FILTER BASED SEQUENTIAL TRAJECTORY CLASSIFIER FOR BEHAVIOR ANALYSIS IN VIDEO SURVEILLANCE
Vahid BASTANI, *University of Genova*
Lucio MARCENARO, *University of Genova*
Carlo REGAZZONI, *University of Genova*

ARS-P39.5 – SYNTHETIC FACE GENERATION UNDER VARIOUS OPERATIONAL CONDITIONS IN VIDEO SURVEILLANCE
Faniya MOKHAYYERI, *École de technologie supérieure*
Eric GRANGER, *École de technologie supérieure*
Guillaume-Alexandre BILODEAU, *École polytechnique de Montréal*

ARS-P4: Classification III

Wednesday, 16:30-18:30
POSTER
Room: **POSTER A**
Session Chair(s): Wenmin WANG, *Peking University*

ARS-P4.1 – CLUSTERED EXEMPLAR-SVM: DISCOVERING SUB-CATEGORIES FOR VISUAL RECOGNITION
Nataliya SHAPOVALOVA, *Simon Fraser University*
Greg MORI, *Simon Fraser University*

ARS-P4.2 – FINE-GRAINED BIRD SPECIES RECOGNITION VIA HIERARCHICAL SUBSET LEARNING
Zongyuan GE, *QUT*
Christopher MCCOOL, *Queensland University of Technology*
Conrad SANDERSON, *NICTA*
Alex BEWLEY, *Queensland University of Technology*
Zetao CHEN, *QUT*
Peter CORKE, *Queensland University of Technology*

ARS-P4.3 – IMAGE CLASSIFICATION USING RBM TO ENCODE LOCAL DESCRIPTORS WITH GROUP-SPARSE LEARNING
Jinzhuo WANG, *Shenzhen Graduate School, Peking University*
Wenmin WANG, *Shenzhen Graduate School, Peking University*
Ronggang WANG, *Shenzhen Graduate School, Peking University*
Wen GAO, *Peking University*

ARS-P4.4 – CROSS-LAYER FEATURES IN CONVOLUTIONAL NEURAL NETWORKS FOR GENERIC CLASSIFICATION TASKS
Kuan-Chuan PENG, *Cornell University*
Tsuhan CHEN, *Cornell University*

ARS-P4.5 – MODELLING LOCAL DEEP CONVOLUTIONAL NEURAL NETWORK FEATURESTO IMPROVE FINE-GRAINED IMAGE CLASSIFICATION
Zongyuan GE, *Queensland University of Technology*
Christopher MCCOOL, *Queensland University of Technology*
Conrad SANDERSON, *NICTA*
Peter CORKE, *Queensland University of Technology*

★ **ARS-P4.6 –** ASK THE DICTIONARY:SOFT-ASSIGNMENT LOCATION-ORIENTATION POOLING FOR IMAGE CLASSIFICATION
Qilong WANG, *Dalian University of Technology*
Xiaona DENG, *Dalian University of Technology*
Peihua LI, *Dalian University of Technology*
Lei ZHANG, *The Hong Kong Polytechnic University*

ARS-P46: Object Detection and Tracking III

Wednesday, 16:30-18:30
POSTER
Room: **POSTER E**

Session Chair(s): Yongyi YANG, *Illinois Institute of Technology*

★ **ARS-P46.1 –** EXTRACTING MAJOR LINES BY RECRUITING ZERO-THRESHOLD CANNY EDGE LINKS ALONG SOBEL HIGHLIGHTS
Jaewoong KIM, *School of Information and Communication Engineering of Sungkyunkwan University*
Sukhan LEE, *School of Information and Communication Engineering of Sungkyunkwan University*

★ **ARS-P46.2 –** IMPROVING UNIFORMITY IN DETECTION PERFORMANCE OF CLUSTERED MICROCALCIFICATIONS IN MAMMOGRAMS
Maria V. SAINZ DE CEA, *Illinois Institute of Technology*
Yongyi YANG, *Illinois Institute of Technology*

ARS-P46.3 – BONE EXTRACTION IN X-RAY IMAGES BY ANALYSIS OF LINE FLUCTUATIONS
Salome KAZEMINIA, *Isfahan University of Technology*
Nader KARIMI, *Isfahan University of Technology*
Behzad MIRMAHBOUB, *Italian Institute of Technology*
S.M.Reza SOROUSHMEHR, *University of Michigan, Ann Arbor*
Shadrokh SAMAVI, *Isfahan University of Technology*

ARS-P46.4 – EXTERNAL FORCES FOR ACTIVE CONTOURS USING THE UNDECIMATED WAVELET TRANSFORM
Ahmed GAWISH, *University of Wateroo*
Paul FIEGUTH, *University of Wateroo*

ARS-P46.5 – A PARAMETRIC MODEL FOR MULTI-LANES DETECTION
Mohammed Elamine MOUMENE, *Université d'Oran, Laboratoire LITIO*
Djemel ZIOU, *Université de Sherbrooke, Département d'Informatique*
Rachid NOURINE, *Université d'Oran, Laboratoire LITIO*

ARS-P46.6 – EFFICIENT BACKGROUND SUBTRACTION WITH LOW-RANK AND SPARSE MATRIX DECOMPOSITION
Salehe ERFANIAN EBADI, *MMV (Multimedia and Vision) Lab/Queen Mary University of London*
Valia GUERRA ONES, *MMV (Multimedia and Vision) Lab/Queen Mary University of London/ Delft University of Technology*
Ebroul IZQUIERDO, *MMV (Multimedia and Vision) Lab/Queen Mary University of London*

ARS-P8: Face Image Analysis I

Wednesday, 16:30-18:30
POSTER
Room: **POSTER H**

Session Chair(s): Riccardo LEONARDI, *Univerity of Brescia*

ARS-P8.1 – EVOLUTIONARY FUSION OF LOCAL TEXTURE PATTERNS FOR FACIAL EXPRESSION RECOGNITION
Faisal AHMED, *University of Calgary*
Padma Polash PAUL, *University of Calgary*
Marina GAVRILOVA, *University of Calgary*

ARS-P8.2 – AGE ESTIMATION UNDER CHANGES IN IMAGE QUALITY: AN EXPERIMENTAL STUDY
Fares ALNAJAR, *Informatics Institute, Faculty of Science, University of Amsterdam*
Theo GEVERS, *Informatics Institute, Faculty of Science, University of Amsterdam*
Sezer KARAOGLU, *University of Amsterdam*

ARS-P8.3 – FACIAL MAKEUP DETECTION VIA SELECTED GRADIENT ORIENTATION OF ENTROPY INFORMATION
Kuan-Hsien LIU, *Academia Sinica*
Tsung-Jung LIU, *National Chung Hsing University*
Hsin-Hua LIU, *National Taiwan University*
Soo-Chang PEI, *National Taiwan University*

ARS-P8.4 – FACE ATTRIBUTE CLASSIFICATION USING ATTRIBUTE-AWARE CORRELATION MAP AND GATED CONVOLUTIONAL NEURAL NETWORKS
Sunghun KANG, *Korea Advanced Institute of Science and Technology*
Donghoon LEE, *Korea Advanced Institute of Science and Technology*
Chang D. YOO, *Korea Advanced Institute of Science and Technology*

ARS-P51: Face Image Analysis II

Wednesday, 16:30-18:30
POSTER
Room: **POSTER J**

Session Chair(s): Riccardo LEONARDI, *Univerity of Brescia*

ARS-P51.1 – REAL-TIME EYE LOCALIZATION, BLINK DETECTION, AND GAZE ESTIMATION SYSTEM WITHOUT INFRARED ILLUMINATION
Bo Chun CHEN, *Graduate Institute of Electronics Engineering National Taiwan University*
Po Chen WU, *Graduate Institute of Electronics Engineering National Taiwan University*
Shao Yi CHIEN, *Graduate Institute of Electronics Engineering National Taiwan University*

ARS-P51.2 – MULTI-CLASS SEMANTIC SEGMENTATION OF FACES
Khalil KHAN, *Università degli Studi di Brescia*
Massimo MAURO, *Università degli Studi di Brescia*
Riccardo LEONARDI, *Università degli Studi di Brescia*

ARS-P51.3 – FACE HALLUCINATION BASED ON NONPARAMETRIC BAYESIAN LEARNING
Minqi LI, *University of Technology*
Richard Yi Da XU, *University of Technology*

★ **ARS-P51.4 –** RANDOM CASCADED-REGRESSION COPSE FOR ROBUST FACIAL LANDMARK DETECTION
Zhen-Hua FENG, *Jiangnan Unversity*
Patrik HUBER, *University of Surrey*
Josef KITTLER, *University of Surrey*
William CHRISTMAS, *University of Surrey*
Xiao-Jun WU, *University of Surrey*

ARS-P51.5 – SINGLE FACE IMAGE SUPER-RESOLUTION VIA SOLO DICTIONARY LEARNING
Felix JUEFEI-XU, *Carnegie Mellon University*
Marios SAVVIDES, *Carnegie Mellon University*

★ **ARS-P51.6 –** CONFIDENCE MEASURE USING COMPOSITE FEATURES FOR EYE DETECTION IN A FACE RECOGNITION SYSTEM
Sang-Il CHOI, *Dankook University*
Yonggeol LEE, *Dankook University*
Chunghoon KIM, *VTOUCH*

ARS-P53: Image Processing Applications II

Wednesday, 16:30-18:30
POSTER
Room: **POSTER G**

Session Chair(s): Peter SCHELKENS, *Vrije Universiteit Brussel*

ARS-P53.1 – VIDEO DENOISING BY ONLINE 3D SPARSIFYING TRANSFORM LEARNING
Bihan WEN, *University of Illinois at Urbana-Champaign*
Saiprasad RAVISHANKAR, *University of Illinois at Urbana-Champaign*
Yoram BRESLER, *University of Illinois at Urbana-Champaign*

ARS-P53.2 – A STRUCTURE-BASED REGION DETECTOR FOR RETINAL IMAGE REGISTRATION
Zeinab GHASSABI, *Department of Computer Engineering, Science and Research Branch, Islamic Azad University*
Jamshid SHANBEHZADEH, *2Department of Computer Engineering, Kharazmi University*
Ali MOHAMMADZADEH, *Department of Remote Sensing, K.N.Toosi University of Technology*

ARS-P53.3 – DIGITAL IMAGE CORRELATION FOR SMALL STRAIN MEASUREMENT IN DEFORMABLE SOLIDS AND GEOMECHANICAL STRUCTURES
Nghia DINH, *University of Western Australia*
Ghulam Mubashar HASSAN, *University of Western Australia*
Arcady DYSKIN, *University of Western Australia*
Cara MACNISH, *University of Western Australia*

ARS-P53.4 – TEXTURE CLASSIFICATION USING RAO'S DISTANCE: AN EM ALGORITHM ON THE POINCARÉ HALF PLANE
Salem SAID, *CNRS, Laboratoire IMS UMR 5218*
Lionel BOMBRUN, *Bordeaux Science Agro, Laboratoire IMS*
Yannick BERTHOUMIEU, *Bordeaux INP, Laboratoire IMS*

ARS-P53.5 – 3D VISUAL DISCOMFORT PREDICTOR BASED ON NEURAL ACTIVITY STATISTICS
Heeseok OH, *Dept. Electrical and Electronic Engineering, Yonsei Univ.*
Jongyoo KIM, *Dept. Electrical and Electronic Engineering, Yonsei Univ.*
Sanghoon LEE, *Dept. Electrical and Electronic Engineering, Yonsei Univ.*
Alan BOVIK, *Dept. Electrical and Computer Engineering, The Univ. of Texas at Austin*

★ **ARS-P53.6 –** UTILIZING IMAGE-FEATURES IN BIOMEDICAL DOCUMENT CLASSIFICATION
Kaidi MA, *CIS Dept. University of Delaware*
Hogyeong JEONG, *CIS Dept. University of Delaware*
Rohith MV, *CIS Dept. University of Delaware*
Gowri SOMANATH, *CIS Dept. University of Delaware*
Ryan TARPINE, *Google*
Kyle SCHUTTER, *Center for Computational Molecular Biology, CS Dept., Brown University*
Dorothea BLOSTEIN, *School of Computing, Queen's University*
Sorin ISTRAIL, *Center for Computational Molecular Biology, CS Dept., Brown University*
Chandra KAMBHAMETTU, *CIS Dept. University of Delaware*
Hagit SHATKAY, *CIS Dept. University of Delaware;School of Computing, Queen's University; Center for Bioinformatics*

ELI-O7: Object Detection in Very High Resolution Satellite Images

Wednesday, 16:30-18:30
LECTURE
Room: **203**
Session Chair(s): Pierre BLANCHART, *CNAM*

16:30 ★ ELI-O7.1 – LOCAL INTEGRITY CONSTRAINTS FOR STRUCTURE DETECTION AND SEGMENTATION IN HIGH-RESOLUTION EARTH OBSERVATION IMAGES
Pierre BLANCHART, *CNAM*
Marin FERECATU, *CNAM*

16:50 ★ ELI-O7.2 – EVALUATING THE SENSORY GAP FOR EARTH OBSERVATION IMAGES USING HUMAN PERCEPTION ANDAN LDA-BASED COMPUTATIONAL MODEL
Gholamreza BAHMANYAR, *German Aerospace Center (DLR)*
Ambar MURILLO MONTES DE OCA, *German Aerospace Center (DLR)*

17:10 **ELI-O7.3 –** CLASSIFICATION OF INTERFEROMETRIC SAR IMAGES BASED ON PARAMETRIC MODELING IN THE FRACTIONAL FOURIER TRANSFORM DOMAIN
Nazli Deniz CAGATAY, *German Aerospace Center (DLR)*
Mihai DATCU, *German Aerospace Center (DLR)*

17:30 **ELI-O7.4 –** ORIENTATION ROBUST OBJECT DETECTION IN AERIAL IMAGES USING DEEPCONVOLUTIONAL NEURAL NETWORK
Haigang ZHU, *University of Chinese Academy of Sciences*
Xiaogang CHEN, *University of Chinese Academy of Sciences*
Weiqun DAI, *University of Chinese Academy of Sciences*
Kun FU, *Institute of Electronics, Chinese Academy of Sciences*
Qixiang YE, *University of Chinese Academy of Sciences*
Jianbin JIAO, *University of Chinese Academy of Sciences*

17:50 **ELI-O7.5 –** FAST AIRCRAFT DETECTION IN SATELLITE IMAGES BASED ON CONVOLUTIONAL NEURAL NETWORKS
Wu HUI, *ISCAS*
Zhang HUI, *ISCAS*
Zhang JINFANG, *ISCAS*
Xu FANJIANG, *ISCAS*

18:10 **ELI-O7.6 –** A NON-PARAMETRIC CFAR DETECTOR BASED ON SAR SEA CLUTTER STATISTICAL MODELING
Jaime MARTIN-DE-NICOLAS, *University of Alcala*
Pilar JARABO-AMORES, *University of Alcala*
Nerea REY-MAESTRE, *University of Alcala*
David MATA-MOYA, *University of Alcala*
Jose-Luis BARCENA-HUMANES, *University of Alcala*

SNT-S9: Show & Tell IX

Wednesday, 16:30-18:30
SHOW & TELL
Room: **SHOW & TELL**
Session Chair(s): Fabrice LABEAU, *McGill University*

SNT-S9.1 – FACIAL EXPRESSION RECOGNITION IN THE WILD USING DEEP FEATURES AND DOMAIN KNOWLEDGE
Motaz EL-SABAN, *Microsoft Advanced Technology Lab*
Abubakrelsedik KARALI, *Swedish institute of computer science*
Ahmad BASSIOUNY, *American university in Cairo*
In this demo, we will show our work in the paper “facial expression recognition in the wild using rich deep features” in action. The demo will be accepting an image with possibly multiple persons, it will detect the several faces and will output for each face confidence values for a set of pre-trained facial expressions, namely: surprise, fear, disgust, happiness, sadness and anger. While several approaches have been developed to solve the facial expression problem, solving it in the wild on real-world images remains an area where much work is still needed. To this end, we present a novel approach towards facial expression recognition. We fuse rich deep features with domain knowledge through encoding discriminant facial patches.

SNT-S9.2 – VISUAL DEMONSTRATION OF INSTABILITY IN CLOSED-LOOP PREDICTOR DESIGN AND SOLUTION VIA ASYMPTOTIC CLOSED-LOOP DESIGN FOR TRANSFORM DOMAIN TEMPORAL PREDICTION
Shunyao LI, *University of California, Santa Barbara*
Tejaswi NANJUNDASWAMY, *University of California, Santa Barbara*
Yue CHEN, *University of California, Santa Barbara*
Kenneth ROSE, *University of California, Santa Barbara*
We propose to demonstrate the instability problem of the predictor design due to quantization error propagation in the traditional closed-loop approach for transform domain temporal prediction in video coders. We will then demonstrate how we employ the Asymptotic Closed-Loop (ACL) design to address this problem.

SNT-S9.3 – LOW-RANK TENSOR DECOMPOSITION BASED ANOMALY DETECTION FOR HYPERSPECTRAL IMAGERY
Hairong QI, *University of Tennessee*
We will demonstrate our novel Tensor Decomposition based anomaly Detection (LTDD) algorithm for Hyperspectral Imagery. Based on the obtained low-rank tensor, LTDD further decomposes the low-rank tensor using Tucker decomposition to extract the core tensor which is treated as the "support" of the anomaly spectral signatures. LTDD then adopts an unmixing approach to the reconstructed core tensor for anomaly detection.

SS4-O1: Very High Resolution Satellite Image Information Extraction

Wednesday, 16:30-18:30
LECTURE Room: **205B**
Session Chair(s): Mihai DATCU, *German Aerospace Center (DLR)*
Daniele RICCIO, *University of Napoli Federico* I

16:30 SS4-O1.1 – INFORMATION EXTRACTION FROM VERY HIGH RESOLUTION SATELITE SAR DATA TIME SERIES USING GRAPH BASED CONNECTED FEATURES
Dusan GLEICH, *University of Maribor*

16:50 SS4-O1.2 – CLASSIFICATION OF POLARIMETRIC SAR IMAGERY USING UNSUPERVISED H/ AND EXTENDED H/ SCHEMES TO DETECT ANOMALIES ON EARTHEN LEVEES
Ramakalavathi MARAPAREDDY, *Mississippi State University*
James V. AANSTOOS, *Mississippi State University*
Nicolas H. YOUNAN, *Mississippi State University*

17:10 SS4-O1.3 – AUTOMATIC RECTANGULAR BUILDING DETECTION FROM VHR AERIAL IMAGERY USING SHADOW AND IMAGE SEGMENTATION
Tran-thanh NGO, *ICube, University of Strasbourg, CNRS*
Christophe COLLET, *ICube, University of Strasbourg, CNRS*
Vincent MAZET, *ICube, University of Strasbourg, CNRS*

17:30 SS4-O1.4 – IMAGE CLASSIFICATION: NO FEATURES, NO CLUSTERING
Shiyong CUI, *German Aerospace Center (DLR)*
Gottfried SCHWARZ, *German Aerospace Center (DLR)*
Mihai DATCU, *German Aerospace Center (DLR)*

17:50 **SS4-O1.5 –** LAND USE AND LAND COVER CLASSIFICATION BASE ON IMAGE SALIENCY MAP COOPERATED CODING
Hui ZHANG, *Institute of Software, Chinese Academy of Sciences (ISCAS)*
Jinfang ZHANG, *Institute of Software, Chinese Academy of Sciences (ISCAS)*
Fanjiang XU, *Institute of Software, Chinese Academy of Sciences (ISCAS)*

TEC-O6: Inpainting and Stitching

Wednesday, 16:30-18:30
LECTURE
Room: **204A**
Session Chair(s): Thrasyvoulos N. PAPPAS, *Northwestern University*

16:30 **TEC-O6.1 –** A USER-FRIENDLY INTERACTIVE IMAGE INPAINTING FRAMEWORK USING LAPLACIAN COORDINATES
Wallace CASACA, *Brown University / University of Sao Paulo*
Danilo MOTTA, *University of Sao Paulo*
Gabriel TAUBIN, *Brown University*
Luis Gustavo NONATO, *University of Sao Paulo*

16:50 **TEC-O6.2 –** MULTI-VIEW IMAGE INPAINTING WITH SPARSE REPRESENTATIONS
Sandhya THASKANI, *TCS Innovation Labs- TRDDC*
Shirish KARANDE, *TCS Innovation Labs- TRDDC*
Sachin LODHA, *TCS Innovation Labs- TRDDC*

17:10 **TEC-O6.3 –** FACE SKETCH SYNTHESIS USING NON-LOCAL MEANS AND PATCH-BASED SEAMING
Liang CHANG, *Beijing Normal University*
Yves ROZENHOLC, *Université Paris Descartes*
Xiaoming DENG, *Institute of Software, Chinese Academy of Sciences*
Fuqing DUAN, *Beijing Normal University*
Mingquan ZHOU, *Beijing Normal University*

17:30 **TEC-O6.4 –** GUIDED INPAINTING WITH CLUSTER-BASED AUXILIARY INFORMATION
Thomas MAUGEY, *INRIA*
Pascal FROSSARD, *EPFL*
Christine GUILLEMOT, *INRIA*

17:50 **TEC-O6.5 –** PATTERN-BASED K-LEVEL CUTSET RECONSTRUCTION
Shengxin ZHA, *Northwestern University*
Thrasyvoulos N. PAPPAS, *Northwestern University*

18:10 **TEC-O6.6 –** SUPERPIXEL-BASED DEPTH MAP INPAINTING FOR RGB-D VIEW SYNTHESIS
Pierre BUYSSENS, *GREYC*
Maxime DAISY, *GREYC*
David TSCHUMPERLE, *GREYC*
Olivier LEZORAY, *GREYC*

TEC-P16: Medical Feature Extraction and Analysis I

Wednesday, 16:30-18:30
POSTER
Room: **POSTER 0**

Session Chair(s): Kjersti ENGAN, *University of Stavanger*

TEC-P16.1 – AUTOMATIC DETECTION OF COLONOSCOPIC ANOMALIES USING CAPSULE ENDOSCOPY
Limamou GUEYE, *Gjøvik University College (GUC)*
Sule Yildirim YAYILGAN, *Gjøvik University College (GUC)*
Faouzi ALAYA CHEIKH, *Faculty of Computer Science, Gjøvik University College*

TEC-P16.2 – AUTOMATIC CLASSIFICATION OF TISSUES USING T1 AND T2 RELAXATION TIMESFROM PROSTATE MRI: A STEP TOWARDS GENERATION OF PET/MR ATTENUATION MAP
Jorge Arturo ZAVALA BOJORQUEZ, *Université de Bourgogne*
Stéphanie BRICQ, *Université de Bourgogne*
Paul Michael WALKER, *Université de Bourgogne*
Alain LALANDE, *Université de Bourgogne*

TEC-P16.3 – NOVEL FEATURES FOR MICROCALCIFICATION DETECTION IN DIGITAL MAMMOGRAM IMAGES BASED ON WAVELET AND STATISTICAL ANALYSIS
Aya KHALAF, *Cairo University*
Inas YASSINE, *Cairo University*

TEC-P16.4 – PROSTATE DETECTION FROM ABDOMINAL ULTRASOUND IMAGES: A PART BASED APPROACH
Nur ALBAYRAK, *Gebze Technical University*
Ayse OKTAY, *Istanbul Medeniyet Universitesi*
Yusuf AKGUL, *Gebze Technical University*

★ **TEC-P16.5 –** FEATURE EXTRACTION FROM BILATERAL DISSIMILARITY IN DBT RECONSTRUCTED VOLUME
Dae Hoe KIM, *KAIST*
Seong Tae KIM, *KAIST*
Wissam J. BADDAR, *KAIST*
Yong Man RO, *KAIST*

TEC-P16.6 – HELICOBACTER PYLORI INFECTION DETECTION FROM MULTIPLE X-RAY IMAGES BASED ON COMBINATION USE OF SUPPORT VECTOR MACHINE AND MULTIPLE KERNEL LEARNING
Kenta ISHIHARA, *Hokkaido University*
Takahiro OGAWA, *Hokkaido University*
Miki HASEYAMA, *Hokkaido University*

TEC-P17: Medical Feature Extraction and Analysis II

Wednesday, 16:30-18:30
POSTER Room: **POSTER N**

Session Chair(s): Kjersti ENGAN, *University of Stavanger*

TEC-P17.1 – AUTOMATIC CLASSIFICATION OF SKIN LESIONS USING GEOMETRICAL MEASUREMENTS OF ADAPTIVE NEIGHBORHOODS AND LOCAL BINARY PATTERNS
Victor GONZALEZ-CASTRO, *École Nationale Supérieure des Mines de Saint-Étienne*
Johan DEBAYLE, *École Nationale Supérieure des Mines de Saint-Étienne*
Yanal WAZAEFI, *Aix-Marseille University, LSIS UMR CNRS 7296*
Mehdi RAHIM, *Aix-Marseille University, LSIS UMR CNRS 7296*
Caroline GAUDY, *Hôpital de la Timone de Marseille, Service de Dermatologie*
Jean-Jacques GROB, *Hôpital de la Timone de Marseille, Service de Dermatologie*
Bernard FERTIL, *Aix-Marseille University, LSIS UMR CNRS 7296*

TEC-P17.2 – ESTIMATING TWO-DIMENSIONAL BLOOD FLOW VELOCITIES FROM VIDEOS
Jun YANG, *MCRLab, University of Ottawa*
Benjamin GUTHIER, *MCRLab, University of Ottawa*
Abdulmotaleb EL SADDIK, *MCRLab, University of Ottawa*

TEC-P17.3 – SIMULTANEOUS EXTRACTION OF TWO ADJACENT BONY STRUCTURES IN X-RAY IMAGES: APPLICATION TO HIP JOINT SEGMENTATION
Fatma OUERTANI, *École de technologie supérieure*
Carlos VAZQUEZ, *École de technologie supérieure*
Thierry CRESSON, *École de technologie supérieure*
Jacques DE GUISE, *École de technologie supérieure*

TEC-P17.4 – DETECTION OF DIABETIC RETINOPATHY AND AGE-RELATED MACULAR DEGENERATION FROM FUNDUS IMAGES THROUGH LOCAL BINARY PATTERNS AND RANDOM FORESTS
Sandra MORALES, *Universitat Politècnica de València*
Kjersti ENGAN, *University of Stavanger*
Valery NARANJO, *Universitat Politècnica de València*
Adrián COLOMER, *Universitat Politècnica de València*

TEC-P19: Multiresolution and Wavelets

Wednesday, 16:30-18:30
POSTER Room: **POSTER L**

Session Chair(s): Laurent NAVARRO, *École des Mines de Saint-Étienne*

TEC-P19.1 – FOUR-CHANNEL LIFTING-HOUSEHOLDER-BASED HADAMARD TRANSFORM
Taizo SUZUKI, *University of Tsukuba*

★ **TEC-P19.2 –** DIVERGENCE-FREE WAVELET FRAMES
Emrah BOSTAN, *EPFL*
Michael UNSER, *EPFL*
John Paul WARD, *EPFL*

TEC-P19.3 – LOGARITHMIC MULTIRESOLUTION ANALYSIS
Laurent NAVARRO, *Mines Saint-Étienne, CIS-EMSE, CNRS: UMR 5307, LGF*
Michel JOURLIN, *University of Saint-Etienne, Lab. H. Curien UMR CNRS 5516, France*
Guy COURBEBAISSE, *University of Lyon, CREATIS, CNRS UMR 5220, INSERM U1044, UCB Lyon1, INSA Lyon*

TEC-P19.4 – OPTIMIZED LIFTING SCHEMES BASED ON ENO STENCILS FOR IMAGEAPPROXIMATION
Mounir KAANICHE, *Institut Galilée, Université Paris 13*
Basarab MATEI, *Institut Galilée, Université Paris 13*
Sylvain MEIGNEN, *University of Grenoble*

★ **TEC-P19.5 –** IMPROVED VARIATIONAL DENOISING OF FLOW FIELDS WITH APPLICATION TO PHASE-CONTRAST MRI DATA
Emrah BOSTAN, *EPFL*
Stamatios LEFKIMMIATIS, *UCLA*
Orestis VARDOULIS, *EPFL*
Nikolaos STERGIOPULOS, *EPFL*
Michael UNSER, *EPFL*

TEC-P25: Supervised and Dictionary-based Approaches

Wednesday, 16:30-18:30
POSTER
Room: **POSTER K**
Session Chair(s): Ayman EL-BAZ, *University of Louisville*

★ **TEC-P25.1 –** A NOVEL FRAMEWORK FOR THE SEGMENTATION OF MR INFANT BRAIN IMAGES
Mahmoud MOSTAPHA, *University of Louisville*
Manuel CASANOVA, *University of Louisville*
Ayman EL-BAZ, *University of Louisville*

TEC-P25.2 – CLINICAL DEEP BRAIN STIMULATION REGION PREDICTION USING REGRESSIONFORESTS FROM HIGH-FIELD MRI
Jinyoung KIM, *Duke University, Surgical Information Sciences (SIS)*
Yuval DUCHIN, *University of Minnesota, Surgical Information Sciences (SIS)*
Guillermo SAPIRO, *Duke University, Surgical Information Sciences (SIS)*
Jerrold VITEK, *University of Minnesota, Surgical Information Sciences (SIS)*
Noam HAREL, *University of Minnesota, Surgical Information Sciences (SIS)*

TEC-P25.3 – SUPERTEXTON-BASED SEGMENTATION IN EARLY DROSOPHILA OOGENESIS
Rodrigo NAVA, *Czech Technical University in Prague*
Jan KYBIC, *Czech Technical University in Prague*

★ **TEC-P25.4 –** SPARSITY PRESERVING MULTIPLE CANONICAL CORRELATION ANALYSIS WITH VISUAL EMOTION RECOGNITION TO MULTI-FEATURE FUSION
Lei GAO, *Zhengzhou University and son University*
Lin QI, *Zhengzhou University*
Ling GUAN, *Zhengzhou University and Ryerson University*

★ **TEC-P25.5 –** DEEP STRUCTURED LEARNING FOR MASS SEGMENTATION FROM MAMMOGRAMS
Neeraj DHUNGEL, *The University of Adelaide*
Gustavo CARNEIRO, *The University of Adelaide*
Andrew BRADLEY, *School of Information Technology and Electrical Engineering, The University of Queensland*

TEC-P25.6 – AUTOMATIC SEGMENTATION OF PATHOLOGICAL LUNG USING INCREMENTAL NONNEGATIVE MATRIX FACTORIZATION
Ehsan HOSSEINI-ASL, *University of Louisville*
Ayman EL-BAZ, *University of Louisville*
Jacek M. ZURADA, *University of Louisville*

TEC-P28: Filtering

Wednesday, 16:30-18:30
POSTER
Room: **POSTER M**

Session Chair(s): Keigo HIRAKAWA, *University of Dayton*

★ **TEC-P28.1 –** STOCHASTIC BILATERAL FILTER FOR HIGH-DIMENSIONAL IMAGES
Christina KARAM, *University of Dayton*
Chong CHEN, *University of Dayton*
Keigo HIRAKAWA, *University of Dayton*

TEC-P28.2 – ATOMIC DECOMPOSITION BASED ANISOTROPIC NON-LOCAL STRUCTURE TENSOR
Zheng YUHUI, *Nanjing University of Information Science and Technology*
Zhou XIAOZHOU, *Nanjing University of Information Science and Technology*
Jeon BYEUNGWOO, *Sungkyunkwan University*
Sun QUANSEN, *Nanjing University of Science and Technology*
Wu YI, *Nanjing University of Information Science and Technology*

TEC-P28.3 – HOW TO MAKE ND IMAGES WELL-COMPOSED WITHOUT INTERPOLATION
Nicolas BOUTRY, *EPITA Research & Development Laboratory (LRDE)*
Thierry GÉRAUD, *EPITA Research & Development Laboratory (LRDE)*
Laurent NAJMAN, *Laboratoire d'Informatique Gaspard-Monge (LIGM)*

TEC-P28.4 – LOCALLY CONTROLLED REGULARIZED SPATIOTEMPORAL ANISOTROPIC DIFFUSION
Pierre PORTEJOIE, *CREATIS, INSA de Lyon, Université de Lyon, CNRS UMR 5220 – INSERM U1044*
Simon MURE, *CREATIS, INSA de Lyon, Université de Lyon, CNRS UMR 5220 INSERM U1044*
Hugues BENOIT-CATTIN, *CREATIS, INSA de Lyon, Université de Lyon, CNRS UMR 5220 INSERM U1044*
Thomas GRENIER, *CREATIS, INSA de Lyon, Université de Lyon, CNRS UMR 5220 INSERM U1044*

★ **TEC-P28.5 –** EXPOSURE-ROBUST ALIGNMENT OF DIFFERENTLY EXPOSED IMAGES
Zhengguo LI, *Institute for Infocomm Research*
Jinghong ZHENG, *Institute for Infocomm Research*
Zijian ZHU, *Institute for Infocomm Research*
Shiqian WU, *Wuhan University of Science and Technology*

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We create solutions built on intelligent networks that solve our customers challenges. Join us to make network and applications work better together. Help turn the Internet of Things into reality. Create novel network-based multimedia analytics, and build innovative cloud, wireless, and software-defined networking systems for video and collaboration.

Disney Research

Disney Research is an international network of research labs, with the mission to push the scientific and technological forefront of innovation at The Walt Disney Company.

Disney Research combines the best of academia and industry, by doing both basic and application-driven research.

We honor Walt Disney's legacy by innovating and deploying our innovations on a global scale.

Faciometrics

FacioMetrics LLC licenses technology for facial image analysis (e.g., 2D/3D facial feature tracking, facial expression analysis, head pose and gaze estimation, facial attribute recognition, face recognition, 3D face reconstruction). We target applications in retail sentiment analysis, facial animation, face editing, face recognition, virtual makeup, emotion measurement and analytics among others.

Google

Much of the world's data is in the form of visual media. We help capture, enhance, organize, and index this information. We build systems that range from cameras, to processing algorithms, to storage, enhancement, and sharing platforms. These systems are designed to enable computer perception of visual data enabled by machine learning, computational imaging, and advanced image and video processing techniques. Our approach is data-driven, on both mobile and cloud platforms, leveraging large data-sets and parallel computing clusters to solve problems at scale.

Our work in image/video annotation and enhancement positively impacts a wide variety of Google products including Android, Google Photos, Image Search, Street View, Google Earth, and many more.

As a leader in image processing research, Google will have a strong technical presence at ICIP 2015 in Quebec City, with several Googlers publishing work. Stop by our booth and chat with our researchers about the projects and opportunities at Google that go into enabling imaging at scale for hundreds of millions of people!

ICIP 2016

The 23rd IEEE International Conference on Image Processing (www.icip2016.com) will be held on September 25-28, 2016, Phoenix, Arizona, the Grand Canyon State. ICIP attendees include experienced researchers/developers in image/video processing and computer vision, providing great learning, networking and recruiting opportunities. ICIP2016 features world-class speakers, tutorials, exhibits, and vision technology showcase.

International Year of the Light

INTERNATIONAL YEAR OF LIGHT 2015

On December 23, 2013, The United Nations General Assembly proclaimed 2015 as the International Year of Light and Light-based Technologies (IYL2015). Championed by scientific organizations around the world, IYL2015 will promote improved public and political understanding of the central role of light in the modern world and celebrate significant scientific anniversaries occurring in 2015. Vist IYL web site at www.light2015.org/Home.html

Logitech

Logitech

Logitech is a world leader in products that connect people to the digital experiences they care about. Spanning multiple computing, communication and entertainment platforms, Logitech's combined hardware and software enable or enhance digital navigation, music and video entertainment, gaming, social networking, audio and video communication over the Internet, video security and home-entertainment control.

Founded in 1981, Logitech International is a Swiss public company listed on the SIX Swiss Exchange (LOGN) and on the Nasdaq Global Select Market (LOGI).

MathWorks

MathWorks

MathWorks is the leading developer of mathematical computing software for engineers and scientists. Founded in 1984, MathWorks employs over 3000 people in 15 countries, with headquarters in Natick, Massachusetts, U.S.A.

MATLAB®, the language of technical computing, is a programming environment for algorithm development, data analysis, visualization, and numeric computation. Simulink® is a graphical environment for simulation and Model-Based Design of multidomain dynamic and embedded systems. The company produces nearly 100 additional products for specialized tasks such as data analysis and image processing.

Microsoft Research

Microsoft Research

Founded in 1991, Microsoft Research conducts both basic and applied research in computer science and software engineering in order to advance the state of the art of computing, help fuel the long-term growth of Microsoft and its products, and solve some of the world's toughest problems through technological innovation.

Netflix

Netflix is the world's leading internet subscription service for enjoying movies and TV shows.

Netflix is the world's leading Internet television network with over 62 million members in over 50 countries enjoying more than 100 million hours of TV shows and movies per day, including original series, documentaries and feature films. Members can watch as much as they want, anytime, anywhere, on nearly any Internet-connected screen. Members can play, pause and resume watching, all without commercials or commitments.

Nvidia

Since 1993, NVIDIA (NASDAQ: NVDA) has pioneered the art and science of visual computing. The company's technologies are transforming a world of displays into a world of interactive discovery -- for everyone from gamers to scientists, and consumers to enterprise customers. More information at http://nvidianews.nvidia.com/ and http://blogs.nvidia.com/.

OMRON

Omron Corporation is an electronics company based in Kyoto, Japan. Omron's primary business is the manufacture and sale of automation components, equipment and systems, which includes machine vision systems for factory automation, face recognition software for digital equipment and visual surveillance systems for safety and security in public space.

Qualcomm

Billions, maybe trillions of times a day… That's how often people around the world touch something made better by Qualcomm. It could be the smartphone in your pocket, the tablet on your coffee table, that wireless modem in your briefcase… it could even be that navigation system in your car or that action camera strapped to your chest. Who is Qualcomm, and what do we do? We are engineers, scientists and business strategists. We are from many different countries and speak many different languages. We come from diverse cultures and have unique perspectives. Together, we focus on a single goal—invent mobile technology breakthroughs.

Québec City Tourism Office

Bienvenue à Québec! We are so happy you're finally here. We know the frenzy of preparing to go to a convention. You're excited to meet your peers and make new connections. You need to keep on top of your work but have the urge to take in all Québec City has to offer. We don't blame you! Thanks to André Morin, President of Optelis and one of Québec City's most dedicated and efficient event ambassador, you get to experience our 400-year history and discover our European flair. Québec City will welcome you as you are, all to better send you home relaxed, with a head full of memories and a tummy full of yummy meals. We know you want to be productive while in Québec. Stay connected using the Québec City Convention Centre's free wireless high-speed Internet and the city's vast network of free Wi-Fi thanks to ZAPQuébec.org. We bet your success will make history, and we're here for you, every step of the way. We hope to see you again soon. À bientôt! Visit us at www.quebecbusinessdestination.com

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Technicolor

Technicolor is a worldwide technology leader in the media and entertainment sector. Our three research and innovation centers and our creative talent pool enable us to lead the market in delivering advanced services to content creators and distributors. We offer content-related technologies and services to the motion picture, broadcast and commercial advertising industries, as well as a wide range of solutions to Pay-TV operators and network service providers for the delivery of digital entertainment, data, voice, and smart home services. We also benefit from an extensive intellectual property portfolio focused on imaging and sound technologies, supporting our thriving licensing business.

YouTube

At YouTube we process more than 300 hours of video every minute and create hundreds of output formats faster than real time, using Google's distributed computing platforms. As part of Google, our video infrastructure pipeline processes video for other products e.g. Photos, Google Play Movies and Drive. We work with all the video imaging teams at Google including Research, Android, Chrome Media, Hangouts and VR. We're involved with launching products in video compression, transcoding, enhancement and analysis, especially for video fingerprinting. Recent product launches including 360Video (omnidirectional) processing, multiangle video playback, slo-motion effects, advanced video compression and automated video denoising, have all leveraged our close relationships with the DSP research community.

We are delighted to be sponsoring ICIP again. Once more we are hosting a workshop to introduce our activities in Imaging DSP/Vision research and open source codec development to the community. Stop by our booth and attend our workshop on Tuesday morning at 10:30 am for a snapshot of exciting new developments, with which you can get involved!

USEFUL INFORMATION

Conference Information

Venue

Québec City Convention Centre
900, René-Lévesque East Blvd, 2nd floor
Québec QC G1R 2B5
CANADA
Phone: +1 418 644 4000 (US & Canada 1 888 679 4000)
Fax: +1 418 644-6455
www.convention.qc.ca

ICIP Entrance
900, Honoré-Mercier Boulevard
Québec QC G1R 5T8
CANADA

Registration Desk

The registration desk is located in Hall 2000 of the main floor of the Convention Centre.

Hours of operation

Sunday September 27, 2015	07:00 – 19:00
Monday, September 28, 2015	07:00 – 18:00
Tuesday, September 29, 2015	07:00 – 18:00
Wednesday, September 30, 2015	07:00 – 18:00

Speaker Ready Room

All presenters of ORAL presentations are mandatorily required to visit the speaker ready room and provide their presentation on a USB key to the IT technician. This will ensure that the technician has met with all presenters and that he/she is fully aware of your presentation requirements. Your collaboration is required to that all sessions run as smoothly as possible. Shortly before the session where you talk is scheduled starts, your presentation and any associated material will automatically be pushed to the computer.

This methodology has a number of advantages:

- Your session chair will know ahead of time that you are attending and will be able to track now-shows;
- You will be insured that all your material will show up properly on the conference AV systems and you will have the support of a technician to correct problems, if any, before they happen
- The sessions will run more smoothly.

There will NO copies of ant presentation material kept after the end of the conference.

The speaker ready room is located in room 2102A on the 2nd floor of the Québec City Convention Centre. This room will be available for all presenters to upload their presentations with the assistance of an IT technician.

Operating hours:

Sunday, September 27	16:00 – 18:00	Tuesday September 29	07:00 – 18:00
Monday, September 28	07:00 – 18:00	Wednesday, September 30	07:00 – 16:30

In case of Emergency

In case of Emergency, please contact Mr. Pierre Bolduc at +1 418 928-4854.

Internet Café

The Internet Café is located on level 3 in the Foyer area. You are welcome to use this at any time during the official opening hours.

WiFi Internet

ICIP 2015 is pleased to offer all participants free wireless Internet access for the duration of the conference. This connection offers speeds of 5 Mbps and a total 3GB bandwidth per day per device.
Wireless Internet Connection Procedure:

1. Activate the wireless networking card on your device;
2. Select the ***Videotron_Centre_des_congrès*** network from the list of available networks;
3. Open a browser; you will be redirected to the Free Wireless Internet Access Vidéotron page).
4. Select ***Access wireless Internet*** then ***Access Internet with Access Code*** and then enter the access code ***915***
5. Accept the terms and conditions;
6. Click on « Connect now ».

Notes

1. Complete this procedure only on the first connection to the network.
2. For any problem concerning the configuration or the connectivity of this connection, please call +1 418 649-5219
3. The access code will be valid until ***September 30, 2015 at 23:30***

Mobile App

The "ICIP 2015" is available on the following app stores:

- Apple App Store (iOS 7 and higher)
- Google Play (Android 2.2.3 and higher)
- BlackBerry World (BlackBerry 10 and higher)
- Windows Phone Store (Windows Phone 8 and higher)

You can also view the app online at http://eventmobi.com/icip2015/

Messages

Messages received by the Organizers for delegates will be posted on the message board located close to the Registration Desk in Hall 2000. Messages between delegates may also be left on this board.

Mobile Phone

Please ensure that your cellular phone, pager, etc., are turned off or put on silent/vibrate mode during sessions.

Badges

Please wear your name badge at all times. This will ensure your access to the technical sessions and the Exhibition Hall.

Tickets for Social Events

You will be given a package containing your name badge and the tickets you ordered for the tours and social events when you check in at the Registration Desk. Please bring the appropriate ticket(s) to all social events. Additional tickets based on space availability will be available for purchase at the Registration Desk.

Accessible Facilities

At the Québec City Convention Centre, you will find spaces, entrances, equipment, and services by an underground passageway adapted to meet the needs of each and every guest. The Centre is a secure facility and offers guests with disabilities enhanced greeting services and personalized support. The Convention Centre is also linked by underground passageway to the Delta Québec, which has 20 rooms adapted for the mobility impaired.

- The facilities are adapted to the needs of the mobility impaired and comply with the National Building Code of Canada as well as the American Disability Act;
- Telephone device for the deaf;
- Restrooms with automatic doors;
- Each public floor is wheelchair accessible;
- Wheelchairs available upon request;
- Adapted elevators and mobile ramps for wheelchairs;
- Help and supervision for the mobility impaired during emergencies.

Travel Tips

Currency, Banking, ATM Machines & Credit Cards

The monetary system in Canada is based on dollars and cents and the currency is the Canadian Dollar.

Foreign currencies can be exchanged at banks and at foreign currency exchange offices either at the Airport or at other locations throughout the city.

Bank debit or credit cards are the most convenient means of getting cash at the many Automatic Teller Machines (ATMs). ATMs are spread throughout the city and accept cards with the Interac, Plus, and Cirrus networks. Most are in operation 24 hours a day / 7 days a week.

Most businesses accept U.S. currency and traveler's cheque, as well as major credit cards (Visa, MasterCard, and American Express).

Sales Taxes

There is a 5% Goods and Services Tax (GST) in effect in Canada and a Provincial Sales Tax (PST) of 9,975% in the Province of Québec, for a combined tax rate of 14,975%. This tax is applicable to most items and is not refundable. An additional tax is applicable to hotel rooms.

Medical Insurance

Visitors are not covered by Canadian health insurance plans. Check with your personal medical plan before leaving your home country to ensure you have adequate travel insurance.

Language

French and English are Canada's two official languages. French is the predominant language in Québec City. However, most, if not all, banks, hotels, airline offices, shops, and key visitor attractions have multilingual staff and most citizens will be able to answer in both languages.

Electricity

The electrical current is the same as in the United States: 110 volts AC at 60Hz adapters are required for appliances from other countries.

Weather

During the autumn months in September and October, the Canadian maple trees blaze with colour for weeks on end and the skies are often dazzling blue. The so-called Indian summer arrives early in Québec City. It usually lasts 2-3 weeks from mid/late September to early/mid-October. Nature's beauty is very colorful in the fall and a very popular time to visit the province. With average minimum and maximum daily temperatures of 7 and 18°C (45-65°F) in September, you may need a light jacket or sweater to keep warm.

Time Zone

Québec City is in the Eastern Standard Time Zone (GMT-0500). Daylight Savings Time (DST) is in effect from 2:00 a.m. on March 8, 2015 until 2:00 a.m. on November 1, 2015.

Telephone Service

Québec City employs two separate area codes: 418 and 581. Calls within the greater Québec City area are local regardless of the area code. However, you will need to dial all ten digits of the phone number in order to be connected. Check with your cellular service provider to ensure your plan offers roaming/long distance service in Québec City.

Getting Around the City

Airport Transfers

The Jean-Lesage International Airport is located 16 km (10 miles) from the centre of the city. Cab fare from the airport to the city centre is a flat CAD $35. All of these services accept major credit cards.

http://www.aeroportdequebec.com/en/to-and-from-the-airport/taxis/

Public Transit (RTC local buses)

The city bus network (Réseau de transport de la capitale (RTC)) serves Québec City, Saint-Augustin-de-Desmaures, Wendake, and Ancienne-Lorette. The bus fares is CAD 3.25 Effective as September 1, 2014. Exact change is required

Daily passes as well as 2-day and weekly passes are also available and are generally advantageous solutions.

http://www.rtcquebec.ca/

Ferry

The ferry links Québec City and Lévis 7 days a week, 365 days a year. It sails every half hour during day time and hourly at night.

http://traversiers.com/traverses/quebeclevis_1.php

Limousine

Limousine rentals services are available from various suppliers.

Taxi

Québec City area taxis can be identified by the sign on their roof. There are several companies. We suggest that you call one of them and they will send a car. You can also get a cab at one of the various taxi stands in the city and in front of any major hotels.

Car

Car rentals can provide a practical way to visit areas less than an hour from downtown, such as the Orleans Island (Île d'Orléans), and nearby regions such as Côte-de-Beaupré, Jacques-Cartier, and Portneuf.

Information on vehicle and parking regulations: **http://www.quebecregion.com/en/useful-information**

Motorcycle

Motorcycles can be rented. However, note that motorcycles are not allowed inside the walls of the Old City unless you have a reservation at a hotel inside the walls.

Cycling

The Québec City area has close to 400 km of bicycle paths and bikeways. For bicycles rentals, visit:

www.cycloservices.net **www.velopasse-sport.com**

Addresses & Phone Numbers

Airlines

Air Canada (www.aircanada.com)
Reservations: 1-888-247-2262
Information: 1-888-422-7533

Porter Airlines (www.flyporter.com)
Reservations: 1-888-619-8622

United Airlines (www.united.com)
Reservations: 1-800-538-2929 (International)
1-800-864-8331 (Domestic)

WestJet (www.westjet.com)
Reservations & flight status: 1-888-937-8538
(1-888-WESTJET)

US Airways (www.usairways.com)
Reservations: 1- 888-240-4770

American Airlines (www.aa.com)
Reservations: 1-800-433-7300

Delta (www.delta.com)
Reservations: 1-800-241-4141 (International)
1-800-221-1212 (Domestic)

Air Transat (http://www.airtransat.com)
Reservations: 1-866-255-4871

Taxis

Taxi Coop 1-418-525-5191
Taxi Québec 1-418-522-2001

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Château Bellevue
16 rue de la Porte,
Québec QC G1R 4M9
Phone: +1 418-692-2573
Fax: +1 418-692-4876

Château Frontenac
1 rue des Carrières,
Québec QC G1R 4P5
Phone: +1 418 692-3861

Château Laurier
1220, Place George-V Ouest,
Québec QC G1R 5B8
Phone: +1 418-522-8108
Fax: +1 418 -524-8768

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Québec QC G1R 5A8
Phone: +1 418 647-1717
Fax: +1 418 647-2146

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Québec QC G1R 4P
Phone: +1 418-647-241
Fax: +1 418-647-6488

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Québec QC G1R 3X4
Phone: +1 418-692-2480
Fax: +1 418-692-4652

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Québec, QC G1R 4W6
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Mariott Courtyard Québec
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Québec QC G1R 3P6
Phone: +1 418-694-4004
Fax: +1 418-694-4007

Palace Royal
775 Honoré-Mercier Ave
Québec QC G1R 6A5
Phone: +1 418 694-2000

TRYP Hotel Pur
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Québec QC G1K 7X4
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LI, Wen;
LI, Xin;
LI, Yingbo; *ENS Paris*
LI, Zhu;
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TZIRITAS, Georgios; *University of Crete*

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UHL, Andreas; *University of Salzburg*
UZUNBAS, Mustafa; *GE Global Research*

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VALENZISE, Giuseppe; *CNRS LTCI - Telecom ParisTech*
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VALVENY, Ernest; *Computer Vision Center - Universitat Autònoma de Barcelona*
VAN BEEK, Peter; *Sharp Labs of America*
VAN DE VILLE, Dimitri; *EPFL and University of Geneva*
VAN WALLENDAEL, Glenn; *Ghent University - iMinds - Multimedia Lab*
VANCE, Antony; *National Instruments*
VANDEWALLE, Patrick; *Philips*
VANTARAM, Sreenath Rao; *Intel Corp*
VARNA, Avinash; *Intel Corporation*
VASSEUR, Pascal; *Université de Rouen*
VATSA, Mayank; *IIIT Delhi*
VÁZQUEZ-PADÍN, David; *University of Vigo*
VEERARAGHAVAN, Ashok; *Rice University*
VELISAVLJEVIC, Vladan; *University of Bedfordshire*
VERDOJA, Francesco; *Università degli Studi di Torino*
VERDOLIVA, Luisa; *Università Federico II di Napoli*
VERTAN, Constantin; *Politehnica University of Bucharest*
VETRO, Anthony; *Mitsubishi Electric Research Labs*
VIELHAUER, Claus; *Brandenburg University of Applied Sciences*
VILAPLANA, Veronica; *Universitat Politecnica de Catalunya*
VILLEGAS, Paulo; *Telefonica I+D*
COURBOULAY, Vincent; *Université de La Rochelle*
VO, Dung; *Ho Chi Minh City University of Technology*
VOLOSHYNOVSKIY, Svyatoslav; *UniGE*
VONIKAKIS, Vassilios; *Advanced Digital Sciences Center*
VROCHIDIS, Stefanos; *Centre for Research and Technology Hellas*
VURAL, Elif; *INRIA*
VYAS, Urvi; *Stanford University*

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WALL, Julie; *Queen Mary University of London*
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WANG, Lei; *University of Wollongong*
WANG, Liang; *National Laboratory of Pattern Recognition, Institute of Automation Chinese Academy of Sciences*
WANG, Meng; *Hefei University of Technology*
WANG, Sheng-Jyh; *National Chiao Tung University*
WANG, Shiqi; *University of Waterloo*
WANG, Yonghui; *Prairie View A&M University*
WANG, Yu-Chiang Frank; *Academia Sinica*
WANG, Zhiyong; *University of Sydney*
WANG, Zhou; *University of Waterloo*
WELLER, Daniel; *University of Virginia*
WENDT, Herwig; *CNRS, University of Toulouse*
WESTERINK, Peter; *IBM*
WIEN, Mathias; *RWTH Aachen University*
WILKINSON, Michael; *University of Groningen*
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WONG, Kin Hong; *The Chinese University of Hong Kong*
WONG, Kwan-Yee Kenneth; *The University of Hong Kong*
WOODARD, Damon; *University of Florida*
WOODS, John; *Rensselaer Polytechnic Institute*
WORRALL, Stewart; *Ericsson*
WU, Wei; *South China University of Technology*
WÜRTZ, Rolf P.; *Ruhr-University*
WYATT, Chris; *Virginia Tech*

X

XIANG, Wei; *University of Southern Queensland*
XIANMING, Liu; *Harbin Institute of Technology*
XIAOCHUN, Cao; *Tianjin University*
XIAOJUN, Qi; *Utah State University*
XIAOPENG, Fan; *Harbin Institute of Technology*
XIAOQIAN, Wang;
XIE, Dan; *University of Massachusetts Amherst*
XINGHUA, Lou; *Vicarious FPC Inc.*
XINXING, Xu; *NTU*
XIONG, Ruiqin; *Peking University*
XU, Changsheng; *Chinese Academy of Sciences*
XU, Min; *University of Technology, Sydney*

Y

YAACOUB, Charles; *Holy Spirit University of Kaslik*
YAMASAKI, Toshihiko; *The University of Tokyo*
YAN, Song; *University of Science and Technology of China*
YANG, Ge; *Carnegie Mellon University*
YANG, Heng; *Queen Mary University of London*
YANG, Huan; *NTU*
YANG, Jie; *Carnegie Mellon University*
YANG, Lei; *HP*
YANG, Ming-Hsuan; *University of California at Merced*
YANG, Seungjoon; *UNIST*
YANG, Wenxian; *Institute for Infocomm Research, A*STAR*
YANG, Yongyi; *Illinois Institute of Tehnology*
YANNICK, Remion; *Université de Reims Champagne Ardenne*
YAO, Jianchao; *DSO National Labs of Singapore*
YE, Jong Chul; *KAIST*
YE, Yan; *InterDigital Communications LLC*
YEA, Sehoon; *LG Electronics*
YOON, Soweon; *Michigan State University / National Institute of Standards and Technology*
YOU, Jane; *The Hong Kong Polytechnic University*
YOUNAN, Nicolas; *Mississippi State University*
YU, Ying Kin; *Shape X*
YU, Yongjian; *Varian Medical Systems, Inc*
YUEN, Pong C; *Hong Kong Baptist University*
YUNJI, Wang;

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ZABULIS, Xenophon; *FORTH-ICS*
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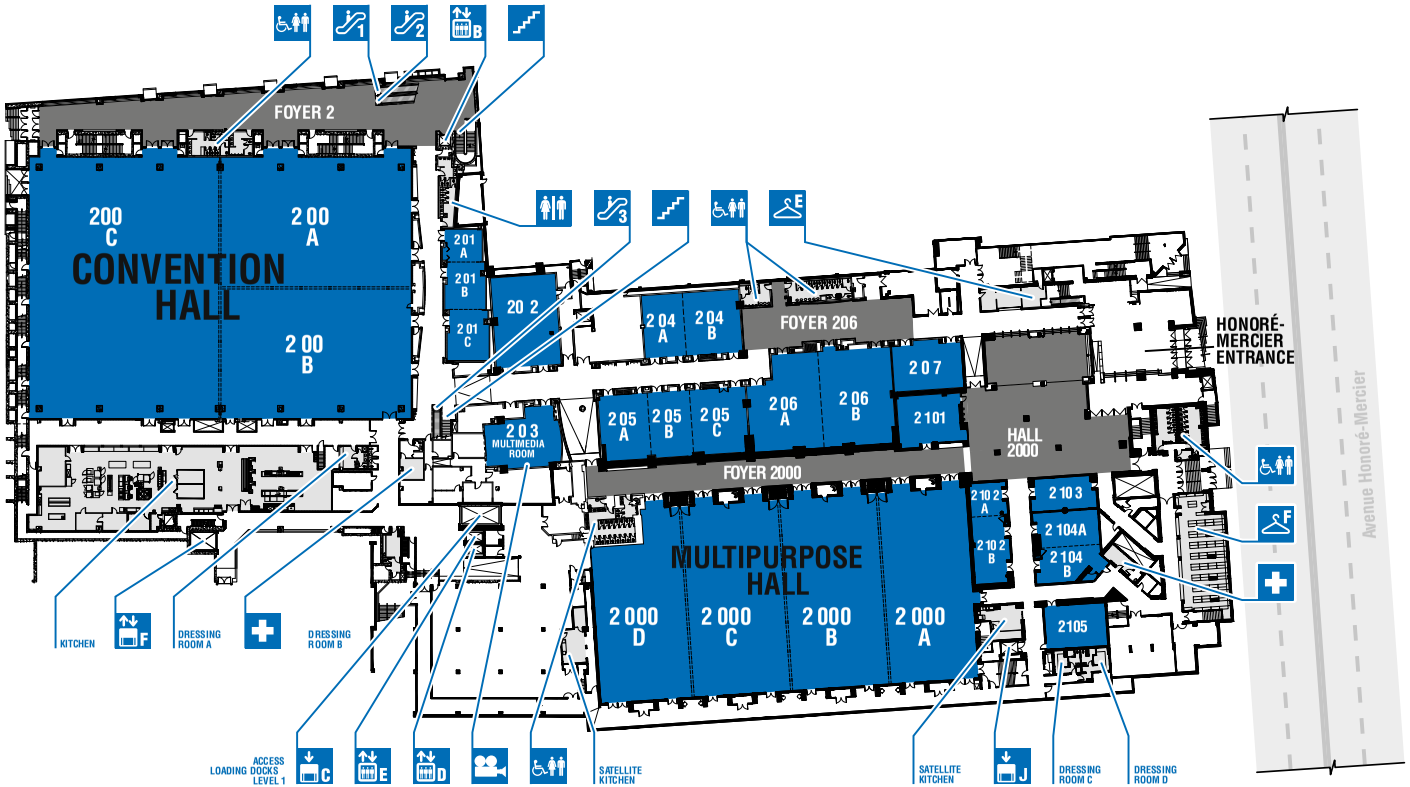
ZAIDI, Habib; *Geneva University Hospital*
ZAMPOLO, Ronaldo; *Federal University of Para*
ZANUTTIGH, Pietro; *University of Padova*
ZENG, Dan; *Shanghai University*
ZENG, Huanqiang; *Huaqiao University*
ZERUBIA, Josiane; *INRIA*
ZERVAKIS, Michalis; *Technical University of Crete*
ZHA, Zheng-Jun; *Chinese Academy of Sciences*
ZHAI, Guangtao; *Shanghai Jiao Tong University*
ZHANG, Changshui; *Tsinghua University*
ZHANG, Dengsheng; *Federation University Australia*
ZHANG, Dongming; *Chinese Academy of Sciences*
ZHANG, Jia; *Purdue University*
ZHANG, Jing; *Beijing University Of Technology*
ZHANG, Lei; *The Hong Kong Polytechnic University*
ZHANG, Li; *Qualcomm*
ZHANG, Luming; *National University of Singapore*
ZHANG, Ning; *IMAX Corporation*
ZHANG, Shaoting; *Rutgers University*
ZHANG, Xin; *South China University of Technology*
ZHANG, Xinfeng; *NTU*
ZHANG, Xujie; *QualComm*
ZHANG, Zhilin; *Samsung Research America*
ZHAO, H. Vicky; *University of Alberta*
ZHAO, Jian; *Microsoft*
ZHAO, Yao; *Beijing Jiaotong University*
ZHENG, Amin; *Hong Kong University of Science and Technology*
ZHENG, Liang; *Tsinghua University*
ZHENGGUO, Li; *Institute for Infocomm Research*
ZHENGHUA, Yu; *Bocom*
ZHONG, Zhang; *University of Texas at Arlington*
ZHOU, Bo; *Qualcomm Technologies Inc.*
ZHOU, Jiantao; *University of Macau*
ZHOU, Liang; *Nanjing University of Posts and Telecommunications*
ZHOU, S. Kevin; *Siemens Corporate Research*
ZHOU, Wengang; *University of Science & Technology of China*
ZHOU, Zhi; *Nanyang Technological University*
ZHUANG, Xiaodan; *Apple*
ZIMMERMANN, Roger; *National University of Singapore*
ZNAMENSKIY, Dmitry; *Philips Research*
ZOIDI, Olga; *Aristotle University of Thessaloniki*
ZORAN, Ivanovski; *University Ss. Cyril and Methodius in Skopje*
ZOU, Ju Jia; *University of Western Sydney*
ZWIGGELAAR, Reyer; *Aberystwyth University*



MEETING ROOMS FLOOR LAYOUT

HOTELS & RESTAURANTS MAP

Old Québec Map

Convention site

1. Québec City Convention Centre

Hotel list

2. Fairmont Le Château Frontenac
3. Hilton Québec
4. Hôtel Château Laurier Québec
5. Hôtel Delta Québec
6. Hôtel Manoir Victoria
7. Hôtel Palace Royal
8. Hôtel Quartier (Bor. Sainte-Foy)
9. Le Concorde
10. Marriott - Québec City Downtown
11. TRYP Québec Hôtel PUR
12. Université Laval residences (Bor. Sainte-Foy)

Restaurant list

Fast Food $8 - $15

13. Café-boulangerie Paillard
14. Chez Ashton
15. Snack Bar St-Jean
16. Subway

Quick lunch $12 - $21

17. Cosmos Café
18. Jack Saloon
19. L'Accent
20. Yuzu Sushi

Business lunch $14 - $28

21. Il Teatro
22. Le Hobbit
23. Le Moine Échanson
24. Les Trois Garçons
25. Piazzetta

NOTES