

IEEE TRANSACTIONS ON INFORMATION FORENSICS AND SECURITY

A PUBLICATION OF THE IEEE SIGNAL PROCESSING SOCIETY



www.signalprocessingsociety.org

2020

VOLUME 15

ITIFAS6

(ISSN 1556-6021)

PAPERS

<i>Anonymization and Data Privacy</i>	
Anonymous Single Sign-On With Proxy Re-Verification	223
..... J. Han, L. Chen, S. Schneider, H. Treharne, S. Wesemeyer, and N. Wilson	
Killing the Password and Preserving Privacy With Device-Centric and Attribute-Based Authentication	
..... K. Papadamou, S. Zannettou, B. Chifor, S. Teican, G. Gugulea, A. Caponi, A. Recupero, C. Pisa, G. Bianchi, S. Gevers, C. Xenakis, and M. Sirivianos	2183
Fundamental Limits of Invisible Flow Fingerprinting	345
..... R. Soltani, D. Goeckel, D. Towsley, and A. Houmansadr	
Relative Privacy Threats and Learning From Anonymized Data	1379
..... M. Boreale, F. Corradi, and C. Viscardi	
DCAP: A Secure and Efficient Decentralized Conditional Anonymous Payment System Based on Blockchain	
..... C. Lin, D. He, X. Huang, M. K. Khan, and K.-K. R. Choo	2440
GDPR-Compliant Personal Data Management: A Blockchain-Based Solution	
..... N. B. Truong, K. Sun, G. M. Lee, and Y. Guo	1746
Secure and Differentially Private Logistic Regression for Horizontally Distributed Data	
..... M. Kim, J. Lee, L. Ohno-Machado, and X. Jiang	695
On the Relationship Between Inference and Data Privacy in Decentralized IoT Networks	852
..... M. Sun and W. P. Tay	
DP-ADMM: ADMM-Based Distributed Learning With Differential Privacy	
..... Z. Huang, R. Hu, Y. Guo, E. Chan-Tin, and Y. Gong	1002
Recycled ADMM: Improving the Privacy and Accuracy of Distributed Algorithms	
..... X. Zhang, M. M. Khalili, and M. Liu	1723
AsgLDP: Collecting and Generating Decentralized Attributed Graphs With Local Differential Privacy	
..... C. Wei, S. Ji, C. Liu, W. Chen, and T. Wang	3239
Federated Learning With Differential Privacy: Algorithms and Performance Analysis	
..... K. Wei, J. Li, M. Ding, C. Ma, H. H. Yang, F. Farokhi, S. Jin, T. Q. S. Quek, and H. V. Poor	3454
Secure Metric Learning via Differential Pairwise Privacy	3640
Smart Traffic-Aware Primary User Emulation Attack and Its Impact on Secondary User Throughput Under Rayleigh Flat Fading Channel	66
..... A. Karimi, A. Taherpour, and D. Cabric	
Comments on “Revocable and Scalable Certificateless Remote Authentication Protocol With Anonymity for Wireless Body Area Networks”	81
..... K.-A. Shim	

(Contents Continued on Page xii)

Private Polynomial Computation From Lagrange Encoding	<i>N. Raviv and D. A. Karpu</i>	553
Cryptomining Cannot Change Its Spots: Detecting Covert Cryptomining Using Magnetic Side-Channel	<i>A. Gangwal and M. Conti</i>	1630
Comments on “A Public Auditing Protocol With Novel Dynamic Structure for Cloud Data”	<i>X. Li, S. Liu, and R. Lu</i>	2881
COPPTCHA: COPPA Tracking by Checking Hardware-Level Activity	<i>K. Basu, S. S. Hussain, U. Gupta, and R. Karri</i>	3213
Comments on “Dropping Activation Outputs with Localized First-Layer Deep Network for Enhancing User Privacy and Data Security”	<i>X. Tan, H. Li, L. Wang, and Z. Xu</i>	3938
REMIND: Risk Estimation Mechanism for Images in Network Distribution	<i>D. Lin, D. Steiert, J. Morris, A. Squicciarini, and J. Fan</i>	539
Optimal Utility-Privacy Trade-Off With Total Variation Distance as a Privacy Measure	<i>B. Rassouli and D. Gündüz</i>	594
A New Capacity-Achieving Private Information Retrieval Scheme With (Almost) Optimal File Length for Coded Servers	<i>J. Zhu, Q. Yan, C. Qi, and X. Tang</i>	1248
Privacy of Stateful RFID Systems With Constant Tag Identifiers	<i>C. Hristea and F. L. Tiplea</i>	1920
Data Disclosure Under Perfect Sample Privacy	<i>B. Rassouli, F. E. Rosas, and D. Gündüz</i>	2012
Compressive Privacy Generative Adversarial Network	<i>B.-W. Tseng and P.-Y. Wu</i>	2499
Decentralized Detection With Robust Information Privacy Protection	<i>M. Sun and W. P. Tay</i>	85
Source-Location Privacy Protection Based on Anonymity Cloud in Wireless Sensor Networks	<i>N. Wang, J. Fu, J. Li, and B. K. Bhargava</i>	100
PrivateLink: Privacy-Preserving Integration and Sharing of Datasets	<i>H. W. Lim, G. S. Poh, J. Xu, and V. Chittawar</i>	564
MoveWithMe: Location Privacy Preservation for Smartphone Users	<i>J. Kang, D. Steiert, D. Lin, and Y. Fu</i>	711
VerifyNet: Secure and Verifiable Federated Learning	<i>G. Xu, H. Li, S. Liu, K. Yang, and X. Lin</i>	911
PAIRING: Privately Balancing Multiparty Real-Time Supply and Demand on the Power Grid	<i>S. Xie, Y. Hong, and P.-J. Wan</i>	1114
SecGrid: A Secure and Efficient SGX-Enabled Smart Grid System With Rich Functionalities	<i>S. Li, K. Xue, D. S. L. Wei, H. Yue, N. Yu, and P. Hong</i>	1318
Privacy-Preserving Collaborative Deep Learning With Unreliable Participants	<i>L. Zhao, Q. Wang, Q. Zou, Y. Zhang, and Y. Chen</i>	1486
Multiple Sensitive Values-Oriented Personalized Privacy Preservation Based on Randomized Response	<i>H. Song, T. Luo, X. Wang, and J. Li</i>	2209
Sparse Mobile Crowdsensing With Differential and Distortion Location Privacy	<i>L. Wang, D. Zhang, D. Yang, B. Y. Lim, X. Han, and X. Ma</i>	2735
Deep Domain Adaptation With Differential Privacy	<i>Q. Wang, Z. Li, Q. Zou, L. Zhao, and S. Wang</i>	3093
Identity-Based Encryption Transformation for Flexible Sharing of Encrypted Data in Public Cloud	<i>H. Deng, Z. Qin, Q. Wu, Z. Guan, R. H. Deng, Y. Wang, and Y. Zhou</i>	3168
An Adaptive Authenticated Data Structure With Privacy-Preserving for Big Data Stream in Cloud	<i>Y. Sun, Q. Liu, X. Chen, and X. Du</i>	3295
SecureNLP: A System for Multi-Party Privacy-Preserving Natural Language Processing	<i>Q. Feng, D. He, Z. Liu, H. Wang, and K.-K. R. Choo</i>	3709
PrivEdge: From Local to Distributed Private Training and Prediction	<i>A. S. Shamsabadi, A. Gascón, H. Haddadi, and A. Cavallaro</i>	3819
Developing Non-Stochastic Privacy-Preserving Policies Using Agglomerative Clustering	<i>N. Ding and F. Farokhi</i>	3911
<i>Applied Cryptography</i>		
Near-Optimal Detection for Binary Tardos Code by Estimating Collusion Strategy	<i>T. Yasui, M. Kurabayashi, N. Funabiki, and I. Echizen</i>	2069
Practical Escrow Protocol for Bitcoin	<i>X. Yang, W. F. Lau, Q. Ye, M. H. Au, J. K. Liu, and J. Cheng</i>	3023
Pay as You Decrypt: Decryption Outsourcing for Functional Encryption Using Blockchain	<i>H. Cui, Z. Wan, X. Wei, S. Nepal, and X. Yi</i>	3227

Practical Privacy-Preserving Face Authentication for Smartphones Secure Against Malicious Clients	J.-H. Im, S.-Y. Jeon, and M.-K. Lee	2386
Towards Practical Privacy-Preserving Decision Tree Training and Evaluation in the Cloud	L. Liu, R. Chen, X. Liu, J. Su, and L. Qiao	2914
Drynx: Decentralized, Secure, Verifiable System for Statistical Queries and Machine Learning on Distributed Datasets	D. Froelicher, J. R. Troncoso-Pastoriza, J. S. Sousa, and J.-P. Hubaux	3035
LPPA: Lightweight Privacy-Preserving Authentication From Efficient Multi-Key Secure Outsourced Computation for Location-Based Services in VANETs	J. Zhou, Z. Cao, Z. Qin, X. Dong, and K. Ren	420
Improving the Efficiency of SVM Classification With FHE	J.-C. Bajard, P. Martins, L. Sousa, and V. Zucca	1709
Joint Watermarking-Encryption-JPEG-LS for Medical Image Reliability Control in Encrypted and Compressed Domains	S. Haddad, G. Coatrieux, A. Moreau-Gaudry, and M. Cozic	2556
Sequence Data Matching and Beyond: New Privacy-Preserving Primitives Based on Bloom Filters	W. Xue, D. Vatsalan, W. Hu, and A. Seneviratne	2973
Fast Additive Partially Homomorphic Encryption From the Approximate Common Divisor Problem	E. L. Cominetti and M. A. Simplicio	2988
Comments on “Unconditionally Secure, Universally Composable Privacy Preserving Linear Algebra”	B. Siabi and M. Berenjkoub	83
SEAL: Sealed-Bid Auction Without Auctioneers	S. Bag, F. Hao, S. F. Shahandashti, and I. G. Ray	2042
Authorized Keyword Searches on Public Key Encrypted Data With Time Controlled Keyword Privacy	L. Xu, W. Li, F. Zhang, R. Cheng, and S. Tang	2096
PEID: A Perceptually Encrypted Image Database for Visual Security Evaluation	S. Guo, T. Xiang, X. Li, and Y. Yang	1151
Puncturable Signatures and Applications in Proof-of-Stake Blockchain Protocols	X. Li, J. Xu, X. Fan, Y. Wang, and Z. Zhang	3872
Device-to-Device Secure Coded Caching	A. A. Zewail and A. Yener	1513
Reversible Image Secret Sharing	X. Yan, Y. Lu, L. Liu, and X. Song	3848
How to Securely Outsource Finding the Min-Cut of Undirected Edge-Weighted Graphs	P. Zhao, J. Yu, H. Zhang, Z. Qin, and C. Wang	315
Comments on “Publicly Verifiable Computation of Polynomials Over Outsourced Data With Multiple Sources”	X. A. Wang, K.-K. R. Choo, J. Weng, and J. Ma	1586
Secure and Efficient Outsourcing of PCA-Based Face Recognition	Y. Zhang, X. Xiao, L.-X. Yang, Y. Xiang, and S. Zhong	1683
<i>Biometrics</i>		
Synergistic Generic Learning for Face Recognition From a Contaminated Single Sample per Person	M. Pang, Y.-M. Cheung, B. Wang, and J. Lou	195
Palmprint Recognition in Uncontrolled and Uncooperative Environment	W. M. Matkowski, T. Chai, and A. W. K. Kong	1601
Fusing MFCC and LPC Features Using 1D Triplet CNN for Speaker Recognition in Severely Degraded Audio Signals	A. Chowdhury and A. Ross	1616
BioTouchPass2: Touchscreen Password Biometrics Using Time-Aligned Recurrent Neural Networks	R. Tolosana, R. Vera-Rodriguez, J. Fierrez, and J. Ortega-Garcia	2616
View-Independent Gait Recognition Using Joint Replacement Coordinates (JRCs) and Convolutional Neural Network	P. Limcharoen, N. Khamsemanan, and C. Nattee	3430
Learning a Compact Vein Discrimination Model With GANerated Samples	G. Wang, C. Sun, and A. Sowmya	635
User Authentication Based on Mouse Dynamics Using Deep Neural Networks: A Comprehensive Study	P. Chong, Y. Elovici, and A. Binder	1086
Domain Adaptive Person Re-Identification via Camera Style Generation and Label Propagation	C.-X. Ren, B. Liang, P. Ge, Y. Zhai, and Z. Lei	1290
Dependency-Aware Attention Control for Image Set-Based Face Recognition	X. Liu, Z. Guo, J. You, and B. V. K. Vijaya Kumar	1501
LVID: A Multimodal Biometrics Authentication System on Smartphones	L. Wu, J. Yang, M. Zhou, Y. Chen, and Q. Wang	1572
Neural Network Architecture and Transient Evoked Otoacoustic Emission (TEOAE) Biometrics for Identification and Verification	J. S. Kang, Y. Lawryshyn, and D. Hatzinakos	1858

EEG-Based Human Recognition Using Steady-State AEPs and Subject-Unique Spatial Filters	S. N. A. Seha and D. Hatzinakos	3901
Towards More Accurate Contactless Fingerprint Minutiae Extraction and Pose-Invariant Matching	H. Tan and A. Kumar	3924
Face Sketch Synthesis in the Wild via Deep Patch Representation-Based Probabilistic Graphical Model	C. Peng, N. Wang, J. Li, and X. Gao	172
Attention-Based Two-Stream Convolutional Networks for Face Spoofing Detection	H. Chen, G. Hu, Z. Lei, Y. Chen, N. M. Robertson, and S. Z. Li	578
Progressively Refined Face Detection Through Semantics-Enriched Representation Learning	Z. Li, X. Tang, X. Wu, J. Liu, and R. He	1394
LS-CNN: Characterizing Local Patches at Multiple Scales for Face Recognition	Q. Wang and G. Guo	1640
Cycle Age-Adversarial Model Based on Identity Preserving Network and Transfer Learning for Cross-Age Face Recognition	L. Du, H. Hu, and Y. Wu	2241
Deep and Ordinal Ensemble Learning for Human Age Estimation From Facial Images	J.-C. Xie and C.-M. Pun	2361
Multi-Stage Feature Constraints Learning for Age Estimation	M. Xia, X. Zhang, W. Liu, L. Weng, and Y. Xu	2417
Adaptive Convolution Local and Global Learning for Class-Level Joint Representation of Facial Recognition With a Single Sample per Data Subject	M. Yang, W. Wen, X. Wang, L. Shen, and G. Gao	2469
Facial Age Synthesis With Label Distribution-Guided Generative Adversarial Network	Y. Sun, J. Tang, X. Shu, Z. Sun, and M. Tistarelli	2679
Facial Age and Expression Synthesis Using Ordinal Ranking Adversarial Networks	Y. Sun, J. Tang, Z. Sun, and M. Tistarelli	2960
Leveraging Shape, Reflectance and Albedo From Shading for Face Presentation Attack Detection	A. Pinto, S. Goldenstein, A. Ferreira, T. Carvalho, H. Pedrini, and A. Rocha	3347
Deep Face Representations for Differential Morphing Attack Detection	U. Scherhag, C. Rathgeb, J. Merkle, and C. Busch	3625
Contactless Fingerprint Recognition Based on Global Minutia Topology and Loose Genetic Algorithm	X. Yin, Y. Zhu, and J. Hu	28
Fingerprint Entropy and Identification Capacity Estimation Based on Pixel-Level Generative Modelling	M. P. Yankov, M. A. Olsen, M. B. Stegmann, S. S. Christensen, and S. Forchhammer	56
End-to-End Latent Fingerprint Search	K. Cao, D.-L. Nguyen, C. Tymoszek, and A. K. Jain	880
Progressive Focusing Algorithm for Reliable Pose Estimation of Latent Fingerprints	C. Deerada, K. Phromsuthirak, A. Rungchokanun, and V. Areekul	1232
Fractal Coding-Based Robust and Alignment-Free Fingerprint Image Hashing	S. M. Abdullahi, H. Wang, and T. Li	2587
A Cryptanalysis of Two Cancelable Biometric Schemes Based on Index-of-Max Hashing	L. Ghammam, K. Karabina, P. Lacharme, and K. Thiry-Atighehchi	2869
Towards Complete and Accurate Iris Segmentation Using Deep Multi-Task Attention Network for Non-Cooperative Iris Recognition	C. Wang, J. Muhammad, Y. Wang, Z. He, and Z. Sun	2944
Person Re-Identification Using Spatial and Layer-Wise Attention	A. R. Lejølle, K. Nasrollahi, B. Krogh, and T. B. Moeslund	1216
Deep Learning-Based Gait Recognition Using Smartphones in the Wild	Q. Zou, Y. Wang, Q. Wang, Y. Zhao, and Q. Li	3197
Biometric Face Presentation Attack Detection With Multi-Channel Convolutional Neural Network	A. George, Z. Mostaani, D. Geissenbuhler, O. Nikisins, A. Anjos, and S. Marcel	42
Biometric Presentation Attack Detection: Beyond the Visible Spectrum	R. Tolosana, M. Gomez-Barrero, C. Busch, and J. Ortega-Garcia	1261
Face Spoofing Detection Based on Local Ternary Label Supervision in Fully Convolutional Networks	W. Sun, Y. Song, C. Chen, J. Huang, and A. C. Kot	3181
Face Spoofing Detection Using Relativity Representation on Riemannian Manifold	C. Yao, Y. Jia, H. Di and Y. Wu	3683
Investigating the Common Authorship of Signatures by Off-Line Automatic Signature Verification Without the Use of Reference Signatures	M. Diaz, M. A. Ferrer, S. Ramalingam, and R. Guest	487
Meta-Learning for Fast Classifier Adaptation to New Users of Signature Verification Systems	L. G. Hafemann, R. Sabourin, and L. S. Oliveira	1735
FragNet: Writer Identification Using Deep Fragment Networks	S. He and L. Schomaker	3013

Encoding Pathlet and SIFT Features With Bagged VLAD for Historical Writer Identification	S. Lai, Y. Zhu, and L. Jin	3553
Intra-Variable Handwriting Inspection Reinforced With Idiosyncrasy Analysis	C. Adak, B. B. Chaudhuri, C.-T. Lin, and M. Blumenstein	3567
Lightweight and Privacy-Preserving Template Generation for Palm-Vein-Based Human Recognition	F. Ahmad, , L.-M. Cheng, and A. Khan	184
Multi-Weighted Co-Occurrence Descriptor Encoding for Vein Recognition	G. Wang, C. Sun, and A. Sowmya	375
Study of a Full-View 3D Finger Vein Verification Technique	W. Kang, H. Liu, W. Luo, and F. Deng	1175
On-the-Fly Finger-Vein-Based Biometric Recognition Using Deep Neural Networks	R. S. Kuzu, E. Piciucco, E. Maiorana, and P. Campisi	2641
Adaptive Weighted Graph Approach to Generate Multimodal Cancelable Biometric Templates	G. S. Walia, G. Jain, N. Bansal, and K. Singh	1945
Cancelable Multi-Biometric Approach Using Fuzzy Extractor and Novel Bit-Wise Encryption	D. Chang, S. Garg, M. Hasan, and S. Mishra	3152
<i>Communication and Information Theoretic Security</i>		
Molecular Barcoding as a Defense Against Benchtop Biochemical Attacks on DNA Fingerprinting and Information Forensics	M. Ibrahim, T.-C. Liang, K. Scott, K. Chakrabarty, and R. Karri	3595
Compressive Privacy for a Linear Dynamical System	Y. Song, C. X. Wang, and W. P. Tay	895
Evaluating Adversarial Evasion Attacks in the Context of Wireless Communications	B. Flowers, R. M. Buehrer, and W. C. Headley	1102
A Robust Approach for Securing Audio Classification Against Adversarial Attacks	M. Esmaeilpour, P. Cardinal, and A. L. Koerich	2147
Selective Audio Adversarial Example in Evasion Attack on Speech Recognition System	H. Kwon, Y. Kim, H. Yoon, and D. Choi	526
Cooperative Specific Emitter Identification via Multiple Distorted Receivers	B. He and F. Wang	3791
Adversarial Deep Ensemble: Evasion Attacks and Defenses for Malware Detection	D. Li and Q. Li	3886
ADVoIP: Adversarial Detection of Encrypted and Concealed VoIP	P. Addesso, M. Cirillo, M. Di Mauro, and V. Matta	943
Optimal Byzantine Attacker Identification Based on Game Theory in Network Coding Enabled Wireless Ad Hoc Networks	X. Liu, T. J. Lim, and J. Huang	2570
Beamforming for Cooperative Secure Transmission in Cognitive Two-Way Relay Networks	Q. Li and L. Yang	130
Secure Relaying in Non-Orthogonal Multiple Access: Trusted and Untrusted Scenarios	A. Arafa, W. Shin, M. Vaezi, and H. V. Poor	210
Establishing Trusted I/O Paths for SGX Client Systems With Aurora	H. Liang, M. Li, Y. Chen, L. Jiang, Z. Xie, and T. Yang	1589
Optimal Downlink Transmission for Cell-Free SWIPT Massive MIMO Systems With Active Eavesdropping	M. Alageli, A. Ikhlef, F. Alsifiani, M. A. M. Abdullah, G. Chen, and J. Chambers	1983
Harnessing Node Multiplicity for Detecting and Mitigating False Data in Wireless Relay Networks	X. Liu and S. W. Kim	3067
Unsupervised Specific Emitter Identification Method Using Radio-Frequency Fingerprint Embedded InfoGAN	J. Gong, X. Xu, and Y. Lei	2898
A New Method for Specific Emitter Identification With Results on Real Radar Measurements	G. Gok, Y. K. Alp, and O. Arikan	3335
Secure OFDM System Design and Capacity Analysis Under Disguised Jamming	Y. Liang, J. Ren, and T. Li	738
Analysis on Cross-Correlation Coefficient for Survivability of Chirp Spread Spectrum Systems	K.-Y. Kim and Y. Shin	1959
On the Discreteness of the Worst Jamming Distribution for SP-OFDM	Y. Liang and T. Li	2884
Secure Transmission Designs for NOMA Systems Against Internal and External Eavesdropping	K. Cao, B. Wang, H. Ding, T. Li, J. Tian, and F. Gong	2930
Physical Layer Authentication for Non-Coherent Massive SIMO-Enabled Industrial IoT Communications	Z. Gu, H. Chen, P. Xu, Y. Li and B. Vucetic	3722
Spatial Sparsity Based Secure Transmission Strategy for Massive MIMO Systems Against Simultaneous Jamming and Eavesdropping	Z. Shen, K. Xu, X. Xia, W. Xie, and D. Zhang	3760
Centralized vs Decentralized Targeted Brute-Force Attacks: Guessing With Side-Information	S. Salamatian, W. Huleihel, A. Beirami, A. Cohen, and M. Médard	3749

Secrecy Analysis of Finite-Precision Compressive Cryptosystems	<i>M. Testa, T. Bianchi, and E. Magli</i>	1
Blind MIMO Cooperative Jamming: Secrecy via ISI Heterogeneity Without CSIT	<i>J. de D. Mutangana and R. Tandon</i>	447
Secure Storage Capacity Under Rate Constraints—Continuity and Super Activation	<i>S. Baur, H. Boche, R. F. Schaefer, and H. V. Poor</i>	959
Secure Communication and Identification Systems — Effective Performance Evaluation on Turing Machines	<i>H. Boche, R. F. Schaefer, and H. V. Poor</i>	1013
Key and Message Semantic-Security Over State-Dependent Channels	<i>A. Bunin, Z. Goldfeld, H. H. Permuter, S. Shamai, P. Cuff, and P. Piantanida</i>	1541
On the Analysis and Improvement of Min-Entropy Estimation on Time-Varying Data	<i>S. Zhu, Y. Ma, X. Li, J. Yang, J. Lin, and J. Jing</i>	1696
Secure and Efficient Compressed Sensing-Based Encryption With Sparse Matrices	<i>W. Cho and N. Y. Yu</i>	1999
Physical Layer Security Protocol for Poisson Channels for Passive Man-in-the-Middle Attack	<i>M. Hayashi and Á. Vázquez-Castro</i>	2295
On the Information Leakage in Private Information Retrieval Systems	<i>T. Guo, R. Zhou, and C. Tian</i>	2999
Private Information Retrieval Over Random Linear Networks	<i>R. Tajeddine, A. Wachter-Zeh, and C. Hollanti</i>	790
Private Coded Matrix Multiplication	<i>M. Kim, H. Yang, and J. Lee</i>	1434
Optimal Transmit Strategies for Gaussian MISO Wiretap Channels	<i>P. L. Cao and T. J. Oechtering</i>	829
Secure Transmission in HARQ-Assisted Non-Orthogonal Multiple Access Networks	<i>Z. Xiang, W. Yang, G. Pan, Y. Cai, Y. Song, and Y. Zou</i>	2171
Constant Modulus Secure Beamforming for Multicast Massive MIMO Wiretap Channels ...	<i>Q. Li, C. Li, and J. Lin</i>	264
Design and Performance Analysis of Channel Estimators Under Pilot Spoofing Attacks in Multiple-Antenna Systems	<i>D. Darsena, G. Gelli, I. Iudice, and F. Verde</i>	3255
In-Band Full-Duplex Discriminatory Channel Estimation Using MMSE	<i>F. U. Din and F. Labreau</i>	3283
Achievable Secrecy Rate Region for Buffer-Aided Multiuser MISO Systems	<i>X. Lan, Q. Chen, and L. Cai</i>	3311
Secure Symbol-Level Precoding in MU-MISO Wiretap Systems	<i>R. Liu, M. Li, Q. Liu, and A. L. Swindlehurst</i>	3359
Artificial-Noise-Aided Secure Multi-User Multi-Antenna Transmission With Quantized CSIT: A Comprehensive Design and Analysis	<i>L. Sun, L. Cao, Z. Tang, and Y. Feng</i>	3734
SAI: A Suspicion Assessment-Based Inspection Algorithm to Detect Malicious Users in Smart Grid	<i>X. Xia, Y. Xiao, and W. Liang</i>	361
Secrecy Performance of Terrestrial Radio Links Under Collaborative Aerial Eavesdropping	<i>X. Yuan, Z. Feng, W. Ni, R. P. Liu, J. A. Zhang, and W. Xu</i>	604
Covert Secret Key Generation With an Active Warden	<i>M. Tahmasbi and M. R. Bloch</i>	1026
Link Selection for Security-QoS Tradeoffs in Buffer-Aided Relaying Networks	<i>J. He, J. Liu, Y. Shen, X. Jiang, and N. Shiratori</i>	1347
Pilot Contamination Attack Detection for NOMA in 5G mm-Wave Massive MIMO Networks	<i>N. Wang, L. Jiao, A. Alipour-Fanid, M. Dabaghchian, and K. Zeng</i>	1363
Impact of Outdated CSI on the Secrecy Performance of Wireless-Powered Untrusted Relay Networks	<i>K. Lee, J.-T. Lim, and H.-H. Choi</i>	1423
Physical Layer Identification Based on Spatial–Temporal Beam Features for Millimeter-Wave Wireless Networks ...	<i>S. Balakrishnan, S. Gupta, A. Bhuyan, P. Wang, D. Koutsonikolas, and Z. Sun</i>	1831
On the Secrecy Performance and Power Allocation in Relaying Networks With Untrusted Relay in the Partial Secrecy Regime	<i>D. P. M. Osorio, H. Alves, and E. E. B. Olivo</i>	2268
A Two-Dimensional Vectorized Secure Transmission Scheme for Wireless Communications	<i>R. Wu, C. Yuan, N. Zhang, and K.-K. R. Choo</i>	2336
Secure Transmission Design in HARQ Assisted Cognitive NOMA Networks	<i>Z. Xiang, W. Yang, Y. Cai, Z. Ding, and Y. Song</i>	2528
Multiple Private Key Generation for Continuous Memoryless Sources with A Helper	<i>L. Zhou</i>	2629
Fixed Region Beamforming Using Frequency Diverse Subarray for Secure mmWave Wireless Communications	<i>Y. Hong, X. Jing, H. Gao, and Y. He</i>	2706
Enhancing Physical Layer Security of Random Caching in Large-Scale Multi-Antenna Heterogeneous Wireless Networks	<i>W. W. C. Liu, Y. Fu, T. Q. S. Quek, F.-C. Zheng, and S. Jin</i>	2840
Wiretap Code Design by Neural Network Autoencoders	<i>K.-L. Besser, P.-H. Lin, C. R. Janda, and E. A. Jorswieck</i>	3374

Secure Beamforming for Full-Duplex MIMO Two-Way Untrusted Relay Systems	S. Zhao, J. Liu, Y. Shen, X. Jiang, and N. Shiratori	3775
Physical Layer Secret Key Generation in Static Environments	N. Aldaghri and H. Mahdavifar	2692
<i>Cybersecurity</i>		
PriRadar: A Privacy-Preserving Framework for Spatial Crowdsourcing	D. Yuan, Q. Li, G. Li, Q. Wang, and K. Ren	299
Reliability Analysis of Large-Scale Adaptive Weighted Networks	B. Song, X. Wang, W. Ni, Y. Song, R. P. Liu, G.-P. Jiang, and Y. J. Guo	651
Android HIV: A Study of Repackaging Malware for Evading Machine-Learning Detection	X. Chen, C. Li, D. Wang, S. Wen, J. Zhang, S. Nepal, Y. Xiang, and K. Ren	987
Automatically Dismantling Online Dating Fraud	G. Suarez-Tangil, M. Edwards, C. Peersman, G. Stringhini, A. Rashid, and M. Whitty	1128
An Ontological Graph Identification Method for Improving Localization of IP Prefix Hijacking in Network Systems	O. S. Alkadi, N. Moustafa, B. Turnbull, and K.-K. R. Choo	1164
ODINI: Escaping Sensitive Data From Faraday-Caged, Air-Gapped Computers via Magnetic Fields	M. Guri, B. Zadov, and Y. Elovici	1190
BAS-VAS: A Novel Secure Protocol for Value Added Service Delivery to Mobile Devices	N. Saxena, M. Conti, K.-K. R. Choo, and N. S. Chaudhari	1470
CPA: Accurate Cross-Platform Binary Authorship Characterization Using LDA	S. Alrabaei, M. Debbabi, and L. Wang	3051
Becoming JUDAS: Correlating Users and Devices During a Digital Investigation	A. Nieto	3325
A Statistical Learning-Based Algorithm for Topology Verification in Natural Gas Networks Based on Noisy Sensor Measurements	Z. Wang and R. S. Blum	3653
Securing Resources in Decentralized Cloud Storage	E. Bacis, S. De C. di Vimercati, S. Foresti, S. Paraboschi, M. Rosa, and P. Samarati	286
Predictability of IP Address Allocations for Cloud Computing Platforms	H. M. J. Almohri, L. T. Watson, and D. Evans	500
Hardware-Assisted MMU Redirection for In-Guest Monitoring and API Profiling	S.-W. Hsiao, Y. S. Sun, and M. C. Chen	2402
Comments on “Provable Multicopy Dynamic Data Possession in Cloud Computing Systems”	W. Guo, S. Qin, F. Gao, H. Zhang, W. Li, Z. Jin, and Q. Wen	2584
SDTE: A Secure Blockchain-Based Data Trading Ecosystem	W. Dai, C. Dai, K.-K. R. Choo, C. Cui, D. Zou, and H. Jin	725
Private and Secure Distributed Matrix Multiplication With Flexible Communication Load	M. Aliasgari, O. Simeone, and J. Kliewer	2722
An Intrusion Detection Method for Line Current Differential Relays	A. Ameli, A. Hooshyar, E. F. El-Saadany, and A. M. Youssef	329
Secure Distributed Dynamic State Estimation in Wide-Area Smart Grids	M. N. Kurt, Y. Yilmaz, and X. Wang	800
Analysis of Moving Target Defense Against False Data Injection Attacks on Power Grid	Z. Zhang, R. Deng, D. K. Y. Yau, P. Cheng, and J. Chen	2320
Hidden Electricity Theft by Exploiting Multiple-Pricing Scheme in Smart Grids	Y. Liu, T. Liu, H. Sun, K. Zhang, and P. Liu	2453
An Intrusion Detection Method for Line Current Differential Relays in Medium-Voltage DC Microgrids	A. Ameli, K. A. Saleh, A. Kirakosyan, E. F. El-Saadany, and M. M. A. Salama	3580
Anomaly Detection in Real-Time Multi-Threaded Processes Using Hardware Performance Counters	P. Krishnamurthy, R. Karri, and F. Khorrami	666
Towards Differential Privacy-Based Online Double Auction for Smart Grid	D. Li, Q. Yang, W. Yu, D. An, Y. Zhang, and W. Zhao	971
Temporal Execution Behavior for Host Anomaly Detection in Programmable Logic Controllers	D. Formby and R. Beyah	1455
PowerHammer: Exfiltrating Data From Air-Gapped Computers Through Power Lines	M. Guri, B. Zadov, D. Bykhovsky, and Y. Elovici	1879
Machine Learning-Based Delay-Aware UAV Detection and Operation Mode Identification Over Encrypted Wi-Fi Traffic	A. Alipour-Fanid, M. Dabaghchian, N. Wang, P. Wang, L. Zhao, and K. Zeng	2346
Game Theory and Reinforcement Learning Based Secure Edge Caching in Mobile Social Networks	Q. Xu, Z. Su, and R. Lu	3415

Defense Strategy for Resilient Shipboard Power Systems Considering Sequential Attacks	T. Ding, M. Qu, X. Wu, B. Qin, Y. Yang, and F. Blaabjerg	3443
HawkesEye: Detecting Fake Retweeters Using Hawkes Process and Topic Modeling	H. S. Dutta, V. R. Dutta, A. Adhikary, and T. Chakraborty	2667
An Attack-Resilient Architecture for the Internet of Things	H. M. J. Almohri, L. T. Watson, and D. Evans	3940
A Dynamic Game Approach to Strategic Design of Secure and Resilient Infrastructure Network	J. Chen, C. Touati, and Q. Zhu	462
Solving the Crowdsourcing Dilemma Using the Zero-Determinant Strategies	Q. Hu, S. Wang, X. Cheng, L. Ma, and R. Bie	1778
Using Private and Public Assessments in Security Information Sharing Agreements	P. Naghizadeh and M. Liu	1801
FlipIn: A Game-Theoretic Cyber Insurance Framework for Incentive-Compatible Cyber Risk Management of Internet of Things	R. Zhang and Q. Zhu	2026
Multiplexed Asymmetric Attacks: Next-Generation DDoS on HTTP/2 Servers	A. Praseed and P. S. Thilagam	1790
Blackmarket-Driven Collusion Among Retweeters—Analysis, Detection, and Characterization	H. S. Dutta and T. Chakraborty	1935
<i>Hardware Security</i>		
End-to-End Traceability of ICs in Component Supply Chain for Fighting Against Recycling	Y. Zhang and U. Guin	767
A Copy-Proof Scheme Based on the Spectral and Spatial Barcoding Channel Models	C. Chen, M. Li, A. Ferreira, J. Huang, and R. Cai	1056
Functional Analysis Attacks on Logic Locking	D. Sirone and P. Subramanyan	2514
A PUF-Based Data-Device Hash for Tampered Image Detection and Source Camera Identification	Y. Zheng, Y. Cao, and C.-H. Chang	620
Trigger Identification Using Difference-Amplified Controllability and Dynamic Transition Probability for Hardware Trojan Detection	K. Huang and Y. He	3387
Amplitude-Modulating Analog/RF Hardware Trojans in Wireless Networks: Risks and Remedies	K. S. Subramani, N. Helal, A. Antonopoulos, A. Nosratinia, and Y. Makris	3497
Reverse Engineering of Printed Electronics Circuits: From Imaging to Netlist Extraction	A. T. Erozan, M. Hefenbrock, M. Beigl, J. Aghassi-Hagmann, and M. B. Tahoori	475
A Theoretical Study of Hardware Performance Counters-Based Malware Detection	K. Basu, P. Krishnamurthy, F. Khorrami, and R. Karri	512
SLATE: A Secure Lightweight Entity Authentication Hardware Primitive	W.-C. Wang, Y. Yona, Y. Wu, S. N. Diggavi, and P. Gupta	276
Resilient System-on-Chip Designs With NoC Fabrics	A. P. D. Nath, S. Boddupalli, S. Bhunia, and S. Ray	2808
Software Protection Using Dynamic PUFs	W. Xiong, A. Schaller, S. Katzenbeisser, and J. Szefer	2053
Homogeneous and Heterogeneous Feed-Forward XOR Physical Unclonable Functions	S. V. S. Avvaru, Z. Zeng, and K. K. Parhi	2485
Highly Independent MTJ-Based PUF System Using Diode-Connected Transistor and Two-Step Postprocessing for Improved Response Stability	S. Lim, B. Song, and S.-O. Jung	2798
Ed-PUF: Event-Driven Physical Unclonable Function for Camera Authentication in Reactive Monitoring System ...	Y. Zheng, X. Zhao, T. Sato, Y. Cao, and C.-H. Chang	2824
A Framework for Evaluation and Analysis on Infection Countermeasures Against Fault Attacks	J. Feng, H. Chen, Y. Li, Z. Jiao, and W. Xi	391
On the Exact Relationship Between the Success Rate of Template Attack and Different Parameters	H. Zhang	681
Electromagnetic Side Channel Information Leakage Created by Execution of Series of Instructions in a Computer Processor	B. B. Yilmaz, M. Prvulovic, and A. Zajić	776
On Side Channel Vulnerabilities of Bit Permutations in Cryptographic Algorithms	J. Breier, D. Jap, X. Hou, and S. Bhasin	1072
A Systematic Evaluation of Wavelet-Based Attack Framework on Random Delay Countermeasures	F. Zhang, X. Dong, B. Yang, Y. Zhou, and K. Ren	1407
Communication Model and Capacity Limits of Covert Channels Created by Software Activities	B. B. Yilmaz, N. Sehatbakhsh, A. Zajić, and M. Prvulovic	1891
A Framework to Counter Statistical Ineffective Fault Analysis of Block Ciphers Using Domain Transformation and Error Correction	S. Saha, D. Jap, D. B. Roy, A. Chakraborti, S. Bhasin, and D. Mukhopadhyay	1905

Threshold Implementations of GIFT: A Trade-Off Analysis	A. Jati, N. Gupta, A. Chatopadhyay, S. K. Sanadhya, and D. Chang	2110
Algebraic Fault Analysis of UOV and Rainbow With the Leakage of Random Vinegar Values	K.-A. Shim and N. Koo	2429
Trivially and Efficiently Composing Masked Gadgets With Probe Isolating Non-Interference	G. Cassiers and F.-X. Standaert	2542
MACM: How to Reduce the Multi-Round SCA to the Single-Round Attack on the Feistel-SP Networks	C. Tu, Z. Liu, N. Gao, C. Ma, J. Ge, and L. Zhang	3079
MISSILE: A System of Mobile Inertial Sensor-Based Sensitive Indoor Location Eavesdropping	H. Zheng and H. Hu	3137
TI-PUF: Toward Side-Channel Resistant Physical Unclonable Functions	A. Aghaie and A. Moradi	3470
Mind the Balance: Revealing the Vulnerabilities in Low Entropy Masking Schemes	J. Ming, Y. Zhou, W. Cheng, H. Li, G. Yang, and Q. Zhang	3694
<i>Multimedia Forensics</i>		
Significance of Subband Features for Synthetic Speech Detection	J. Yang, R. K. Das, and H. Li	2160
An Embedding Cost Learning Framework Using GAN	J. Yang, D. Ruan, J. Huang, X. Kang, and Y.-Q. Shi	839
Source Printer Classification Using Printer Specific Local Texture Descriptor	S. Joshi and N. Khanna	160
Towards Real-Time Eyeblink Detection in the Wild: Dataset, Theory and Practices	G. Hu, Y. Xiao, Z. Cao, L. Meng, Z. Fang, J. T. Zhou, and J. Yuan	2194
Facing Device Attribution Problem for Stabilized Video Sequences	S. Mandelli, P. Bestagini, L. Verdoliva, and S. Tubaro	14
Mitigation of H.264 and H.265 Video Compression for Reliable PRNU Estimation	E. Altinisik, K. Tasdemir, and H. T. Sencar	1557
<i>JpgScraper</i> : An Advanced Carver for JPEG Files	E. Uzun and H. T. Sencar	1846
ENF Signal Enhancement in Audio Recordings	G. Hua and H. Zhang	1868
Identification of VoIP Speech With Multiple Domain Deep Features	Y. Huang, B. Li, M. Barni, and J. Huang	2253
AReN: A Deep Learning Approach for Sound Event Recognition Using a Brain Inspired Representation	A. Greco, N. Petkov, A. Saggese, and M. Vento	3610
Noiseprint: A CNN-Based Camera Model Fingerprint	D. Cozzolino and L. Verdoliva	144
Gradient-Based Illumination Description for Image Forgery Detection	F. Matern, C. Riess, and M. Stamminger	1303
Forensic Similarity for Digital Images	O. Mayer and M. C. Stamm	1331
Detection of HEVC Double Compression With the Same Coding Parameters Based on Analysis of Intra Coding Quality Degradation Process	X. Jiang, Q. Xu, T. Sun, B. Li, and P. He	250
Video Integrity Verification and GOP Size Estimation via Generalized Variation of Prediction Footprint	D. Vázquez-Padín, M. Fontani, D. Shullani, F. Pérez-González, A. Piva, and M. Barni	1815
Camera Fingerprint Extraction via Spatial Domain Averaged Frames	S. Taspinar, M. Mohanty, and N. Memon	3270
<i>Multimedia Content Hash</i>		
Inference of Suspicious Co-Visitation and Co-Rating Behaviors and Abnormality Forensics for Recommender Systems	Z. Yang, Q. Sun, Y. Zhang, L. Zhu, and W. Ji	2766
An End-to-End Dense-InceptionNet for Image Copy-Move Forgery Detection	J.-L. Zhong and C.-M. Pun	2134
True-Color and Grayscale Video Person Re-Identification	F. Ma, X.-Y. Jing, X. Zhu, Z. Tang, and Z. Peng	115
Minimal Information Exchange for Secure Image Hash-Based Geometric Transformations Estimation	F. Guerrini, M. Dalai, and R. Leonardi	3482
<i>Network Security</i>		
Active Defense-Based Resilient Sliding Mode Control Under Denial-of-Service Attacks	C. Wu, L. Wu, J. Liu, and Z.-P. Jiang	237
Dynamic Firewall Decomposition and Composition in the Cloud	S. Bagheri and A. Shameli-Sendi	3526
A GLRT-Based Mechanism for Detecting Relay Misbehavior in Clustered IoT Networks	N. V. Abhishek, A. Tandon, T. J. Lim, and B. Sikdar	435
A Collaborative Security Framework for Software-Defined Wireless Sensor Networks	C. Miranda, G. Kaddoum, E. Bou-Harb, S. Garg, and K. Kaur	2602
A Method of Few-Shot Network Intrusion Detection Based on Meta-Learning Framework	C. Xu, J. Shen, and X. Du	3540

Deep Learning Hierarchical Representation From Heterogeneous Flow-Level Communication Data	G. Shao, X. Chen, X. Zeng, and L. Wang	1525
<i>PermPair</i> : Android Malware Detection Using Permission Pairs	A. Arora, S. K. Peddoju, and M. Conti	1968
On the Dissection of Evasive Malware	D. C. D'Elia, E. Coppa, F. Palmaro, and L. Cavallaro	2750
Familial Clustering for Weakly-Labeled Android Malware Using Hybrid Representation Learning	Y. Zhang, Y. Sui, S. Pan, Z. Zheng, B. Ning, I. Tsang, and W. Zhou	3401
Android Malware Detection via (Somewhat) Robust Irreversible Feature Transformations	Q. Han, V. S. Subrahmanian, and Y. Xiong	3511
(In-)Security of Cookies in HTTPS: Cookie Theft by Removing Cookie Flags	H. Kwon, H. Nam, S. Lee, C. Hahn, and J. Hur	1204
Khaos: An Adversarial Neural Network DGA With High Anti-Detection Ability	X. Yun, J. Huang, Y. Wang, T. Zang, Y. Zhou, and Y. Zhang	2225
DINA: Detecting Hidden Android Inter-App Communication in Dynamic Loaded Code	M. Alhanahnah, Q. Yan, H. Bagheri, H. Zhou, Y. Tsutano, W. Srissa-an, and X. Luo	2782
On the Security of a Key Agreement and Key Protection Scheme	Y. Han, C. Xu, D. He, and K. Chen	3293
An Efficient Authentication Scheme for Intra-Vehicular Controller Area Network	B. Palaniswamy, S. Camtepe, E. Foo, and J. Pieprzyk	3107
ReHand: Secure Region-Based Fast Handover With User Anonymity for Small Cell Networks in Mobile Communications	C.-I. Fan, J.-J. Huang, M.-Z. Zhong, R.-H. Hsu, W.-T. Chen, and J. Lee	927
Extensible Conditional Privacy Protection Authentication Scheme for Secure Vehicular Networks in a Multi-Cloud Environment	J. Cui, X. Zhang, H. Zhong, J. Zhang, and L. Liu	1654
Symmetry Degree Measurement and Its Applications to Anomaly Detection	T. Qin, Z. Liu, P. Wang, S. Li, X. Guan, and L. Gao	1040
Automated Permission Model Generation for Securing SDN Control-Plane	H. Kang, V. Yegneswaran, S. Ghosh, P. Porras, and S. Shin	1668
Understanding the Manipulation on Recommender Systems through Web Injection	Y. Zhang, J. Xiao, S. Hao, H. Wang, S. Zhu, and S. Jajodia	3807
SARA: Secure Asynchronous Remote Attestation for IoT Systems	E. Dushku, M. M. Rabbani, M. Conti, L. V. Mancini, and S. Ranise	3123
Atomos: Constant-Size Path Validation Proof	A. He, K. Bu, Y. Li, E. Chida, Q. Gu, and K. Ren	3832
Three-Hop Untrusted Relay Networks With Hardware Imperfections and Channel Estimation Errors for Internet of Things	M. Letafati, A. Kuhestani, and H. Behroozi	2856
<i>Surveillance</i>		
Bi-Directional Center-Constrained Top-Ranking for Visible Thermal Person Re-Identification	M. Ye, X. Lan, Z. Wang, and P. C. Yuen	407
PurifyNet: A Robust Person Re-Identification Model With Noisy Labels	M. Ye and P. C. Yuen	2655
Target-Specific Siamese Attention Network for Real-Time Object Tracking	K. Thanikasalam, C. Fookes, S. Sridharan, A. Ramanan, and A. Pirihdiyaarachchi	1276
Operator-in-the-Loop Deep Sequential Multi-Camera Feature Fusion for Person Re-Identification	K. L. Navaneet, R. K. Sarvadevabhatla, S. Shekhar, R. V. Babu, and A. Chakraborty	2375
<i>Usability and Human Factors</i>		
An End-to-End Attack on Text CAPTCHAs	Y. Zi, H. Gao, Z. Cheng, and Y. Liu	753
Information Theoretical Analysis of Unfair Rating Attacks Under Subjectivity	D. Wang, T. Muller, J. Zhang, and Y. Liu	816
Trust Management in Industrial Internet of Things	C. Boudagdigue, A. Benslimane, A. Kobbane, and J. Liu	3667
<i>Watermarking and Steganography</i>		
Adaptive Batch Size Image Merging Steganography and Quantized Gaussian Image Steganography	M. Sharifzadeh, M. Aloraini, and D. Schonfeld	867
Reversible Data Hiding in JPEG Images Based on Negative Influence Models	J. He, J. Chen, and S. Tang	2121
Location-Based PVO and Adaptive Pairwise Modification for Efficient Reversible Data Hiding	T. Zhang, X. Li, W. Qi, and Z. Guo	2306
An Insight Into Pixel Value Ordering Prediction-Based Prediction-Error Expansion	W. He and Z. Cai	3859

(Contents Continued from Page xx)

Reverse JPEG Compatibility Attack	<i>J. Butora and J. Fridrich</i>	1444
Non-Additive Cost Functions for Color Image Steganography Based on Inter-Channel Correlations and Differences	<i>Y. Wang, W. Zhang, W. Li, X. Yu, and N. Yu</i>	2081
Audio Steganography Based on Iterative Adversarial Attacks Against Convolutional Neural Networks	<i>J. Wu, B. Chen, W. Luo, and Y. Fang</i>	2282
Depth-Wise Separable Convolutions and Multi-Level Pooling for an Efficient Spatial CNN-Based Steganalysis	<i>R. Zhang, F. Zhu, J. Liu, and G. Liu</i>	1138
Universal Detection of Video Steganography in Multiple Domains Based on the Consistency of Motion Vectors	<i>L. Zhai, L. Wang, and Y. Ren</i>	1762
List of Reviewers		3955
EDICS		
Available at https://signalprocessingsociety.org/publications-resources/ieee-transactions-information-forensics-and-security/edics		
Information for Authors	Available at https://signalprocessingsociety.org/publications-resources/information-authors	
2020 INDEX	Available online at http://ieeexplore.ieee.org	
