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Special Issue: Selected Papers of the IEEE International Conference on Computer and Information Technology (ICCIT 2009)

Guest Editorial

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In recent years, networking of computing devices has been going through rapid evolution and thus continuing to be an ever expanding area of importance. Different technologies, protocols, services and usage patterns have contributed to the major research interests in this area of computer science. The current special issue is an effort to bring forward some of these interesting developments that are being pursued by researchers at present in different parts of the globe. Our objective is to provide the readership with some insight into the latest innovations in computer networking through this.

This Special Issue presents selected papers from the twelfth conference of the series (ICCIT 2009) held during December 21-23, 2009 at the Independent University Bangladesh. The first ICCIT was held in Dhaka, Bangladesh, in 1998. Since then the conference has grown to be one of the largest computer and IT related research conferences in the South Asian region, with participation of academics and researchers from many countries around the world. Starting in 2008 the proceedings of ICCIT are included in IEEExplore.

In 2009, a total of 473 full papers were submitted to the conference of which 150 were accepted after reviews conducted by an international program committee comprising 84 members from 16 countries with assistance from 83 reviewers. This was tantamount to an acceptance rate of 31.7%. From these 150 papers, 13 highly ranked manuscripts were invited for this Special Issue. The authors were advised to enhance their papers significantly and submit them to undergo review for suitability of inclusion into this publication. Of those, only six papers survived the review process and have been selected for inclusion in this Special Issue. The authors of these papers represent academic and/or research institutions from Australia, Bangladesh, Japan, and Korea. These papers address issues concerning different domains of networks namely, optical fiber communication, sensor networking, interconnection networks, issues related to networking hardware and software and ad hoc networks.

The paper titled "Reduction of monitoring cost in sensor networks using proximity queries" aims at reducing energy consumption in wireless sensor network through efficient data aggregation. The authors, Md. Rakibul Haque and Mahmuda Naznin come up with a hybrid method for processing spatial and temporal queries. The scheme they propose has been named as "Spatial and Temporal Processing".

The manuscript "Impact of GVD and SPM on the Performance of DS-OCDMA" deals with issues related to multiplexing through optical fiber links. The authors, Md. Jahedul Islam and Md. Rafiqul Islam present a new mechanism for Direct Sequence Optical Code Division Multiple Access (DS-OCDMA) along with an analytical model to show how the performance of the link gets affected by different parameters. They also derive optimal operational conditions and shed light on how the performance can be further improved.

The four authors Md. Shamim Ahsan, Man Seop Lee, S. H. Shah Newaz, and Syed Md. Asif of the paper "Migration to the Next Generation Optical Access Networks Using Hybrid WDM/TDM-PON" also address optical networking concerns. They introduce a novel idea of self restoring hybrid Time Division Multiplexing/Frequency Division Multiplexing – Passive Optical Network (TDM/WDM-PON). The article reports that this technique increases the

availability of network resources along with being cost effective, low power consuming and ensuring good signal quality.

The article titled "Symmetric and Folded Tori Connected Torus Network" deals with issues in interconnection networks. The authors, M.M. Hafizur Rahman, Yasushi Inoguchi, Monoz Kumar Kundu, and Faiz Al Faisal propose a symmetric mechanism for Tori Connected Torus Network (TTN), called STTN. Despite the significant performance improvements, the authors figure out the limitations of STTN and thus devise a folding mechanism resulting in another innovative mechanism they name as Folded TTN (FTTN).

The manuscript "FPGA Implementation of an LDPC Decoder using a Reduced Complexity Message Passing Algorithm" has been contributed by Vikram Arkalgud Chandrasetty and Syed Mahfuzul Aziz. The paper proposes an efficient decoding scheme based on hard decision-decoding mechanism which utilizes soft channel state information. The ultimate gain is better decoding performance and simpler hardware implementation.

Ad hoc networks have become one important component in the networking world. The paper "A Geometric Model to Reduce Interference Computations in Simulation of Large Ad hoc Networks" addresses issues related to simulation of interference for large ad hoc networks. The authors, Roksana Akter and M. Lutfar Rahman observe that conventional well established simulation mechanisms or tools often take considerably more resource, are slow and are not scalable. They come up with an idea that adopts a geometrical approach for the optimization of the complexity of interference computations in simulations of wireless mobile ad hoc networks.

Finally, the Guest Editors would like to express their sincere gratitude to the 17 reviewers besides the guest editors themselves (F. Rahman, Junyi Feng, Lenin Mehedy, Mohammad Arozullah, Mohd Farhan Md Fudzee, S.P. Mazumder, AKM Azad, Iftekhar Ahmad, Hairulnizam Mahdin, Harinda Fernando, Abdullah Al Yusuf, Letian Rong, Satoshi Utsumi, Gour Karmakar, Iqbal Gondal, Thomas Derham, and Shivali Goel) from several countries (Australia, Bangladesh, China, Japan, UK and USA) who have given immensely to this process. They have responded to the Guest Editors in the shortest possible time and dedicated their valuable time to ensure that the Special Issue contains high-quality papers with significant novelty and contributions.

Guest Editors

Salim Zabir is leading research and development on machine to machine (M2M) and e-health, wellness and disabilities at Orange Labs/France Telecom, Japan. He had his PhD and an MS in information science from Tohoku University, Japan. Before that, he obtained his MSc Engineering and BSc Engineering degrees in Computer Science and Engineering from Bangladesh University of Engineering and Technology. Prior to his current appointment, he has served at Tohoku University, Japan, Kyushu University, Japan, Kyung Hee University, Korea and Bangladesh University of Engineering and Technology. He also worked with Panasonic R&D headquarters in Osaka, Japan. His research interests include computer networks, networking protocols, performance evaluations, ubiquitous computing, applications of ICT for development etc. Dr. Zabir has been serving in the program/technical committees of various international conferences and is guest editing special issues of scholarly journals. He is a member of the IEEE and BCS.

Jemal H. Abawajy is an associate professor, Deakin University, Australia. Dr. Abawajy is the director of the "Pervasive Computing & Networks" research groups at Deakin University. The research group includes 15 PhD students, several masters and honors students and other staff members. Dr. Abawajy is actively involved in funded research in robust, secure and reliable resource management for pervasive computing (mobile, clusters, enterprise/data grids, web services) and networks (wireless and sensors) and has published more than 200 research articles in refereed international conferences and journals as well as a number of technical reports. Dr. Abawajy has given keynote/invited talks at many conferences. Dr. Abawajy has guest-edited several international journals and served as an associate editor of international conference proceedings. In addition, he is on the editorial board of several international journals. Dr. Abawajy has been a member of the organizing committee for over 100 international conferences serving in various capacity including chair, general co-chair, vice-chair, best paper award chair, publication chair, session chair and program committee. He is also a frequent reviewer for international research journals (e.g., FGCS, TPDS and JPDC), research grant agencies, and PhD examinations.

Farid Ahmed is currently with the Applied Information Sciences Department at Johns Hopkins University Applied Physics Laboratory at Laurel, MD. Prior to this position, he had been associate professor of electrical engineering and computer science at the Catholic University of America, Washington, DC. Dr. Ahmed's professional background includes signal/image processing, computer networks, information security, digital watermarking, cryptography, and optical information processing. He has a publication record of over fifty peer-reviewed journal articles and conference papers combined in these areas and holds 5 US patents. Dr. Ahmed is an associate editor of the EURASIP Journal of Wireless Communications and Networking. He has also been serving on the technical program committee of SPIE conference, ICISST, IFIP N2S, IEEE NAECON, and ICCIT etc. Dr. Ahmed is a member of SPIE and Computer Security Institute, and a senior member of IEEE.

Joarder Kamruzzaman received a B.Sc. and M.Sc. in electrical engineering from Bangladesh University of Engineering & Technology, Dhaka, Bangladesh in 1986 and 1989 respectively, and a PhD in information system engineering from Muroran Institute of Technology, Japan, in 1993. Currently, he is a faculty member in the Faculty of Information Technology, Monash University, Australia. His research interest includes computer networks, computational intelligence, and bioinformatics. He has published over 125 peer-reviewed publications which include 35 journal papers and 5 book chapters, and edited two reference books on computational intelligence theory and applications. He is currently serving as a program committee member of a number of international conferences.

Mohammad Ataul Karim is Vice President for Research of Old Dominion University in Norfolk, Virginia. His research areas include information processing, pattern recognition, computing, displays, and electro-optical devices and systems. Dr. Karim is author of 17 books, 7 book chapters, and over 350 articles. He is North American Editor of Optics & Laser Technology and an Associate Editor of the IEEE Transactions on Education. He has served as guest editor for over twenty journal special issues. Professor Karim is an elected fellow of the Institution of Electrical and Electronics Engineers (IEEE), Optical Society of America (OSA), Society of Photo-Instrumentation Engineers (SPIE), the Institute of Physics (InstP), the Institution of Engineering & Technology (IET), and Bangladesh Academy of Sciences. He received his BS in physics in 1976 from the University of Dacca, Bangladesh, and MS degrees in both physics and electrical engineering, and a Ph.D. in electrical engineering from the University of Alabama respectively in 1978, 1979, and 1981.