THE INTERNATIONAL PERFORMANCE, COMPUTING, AND COMMUNICATIONS CONFERENCE IS THE PREMIER IEEE CONFERENCE PRESENTING RESEARCH IN THE PERFORMANCE OF COMPUTER AND COMMUNICATION SYSTEMS.

FOR MORE THAN THREE DECADES, IPCCC HAS BEEN A RESEARCH FORUM FOR ACADEMIC, INDUSTRIAL AND GOVERNMENT RESEARCHERS.
MESSAGE FROM THE GENERAL CHAIR

I am very excited to welcome you to the 2011 IEEE International Performance, Computing, and Communications Conference (IPCCC 2011). This is the 30-year anniversary of this premium conference on performance, computers, and communications. I am extremely happy to celebrate it with all of you.

IPCCC 2011 consists of two keynote talks, both by distinguished researchers, a main conference with two parallel tracks, a poster session, and a workshop. I would like to thank our distinguished keynote speakers, our excellent technical program co-chairs and technical program committee members, our hardworking organizing committee members for all their hard work for the conference. Without them, it would not be possible to have IPCCC 2011.

Finally, I am very happy to enjoy the new conference venue this year: Orlando. I hope you will find our conference as nice as this fantastic city.

SHENG ZHONG,
GENERAL CHAIR, IPCCC 2011

MESSAGE FROM THE TECHNICAL PROGRAM CO-CHAIRS

Welcome to the 30th IEEE International Performance, Computing and Communications Conference (IPCCC 2011). On behalf of the technical program committee, we would like to thank all the authors for the high-quality papers that are accepted by the IPCCC main conference and by the workshop held in conjunction with the conference.

This year, IPCCC 2011 received 129 paper submissions, out of which 35 were selected for publication as regular papers with an acceptance rate of 27.1 percent. Another 10 submissions were selected for publication as short papers. Most submissions received three or more peer reviews from our technical program committee and external reviewers. We were only able to accept papers that received broad support from the reviewers. The total technical program includes 2 keynotes, 13 technical sessions (2 of them from HotWiSec workshop) and 1 poster session. We would like to thank our program committee members as well as external reviewers, consisting of high visibility researchers, whose dedication and hard work made the selection of papers for the proceedings possible.

We wish to thank all who contributed to the quality and success of IPCCC 2011. We particularly appreciate the guidance and support from General Chair Prof. Sheng Zhong and Vice General Chairs Prof. Steven Ko and Prof. Chengkai Li. We also thank Publications Chair Prof. Song Fu, Publicity Chair Prof. Liehuang Zhu, Web Chair Neil Nelson, Financial Chair Nasrullah, Registration Chair Jack Chen, Workshop Chairs Prof. Tingting Chen and Prof. Murtuza Jadiwala, and Poster Chair Prof. Fan Wu.

We once again welcome you all to IPCCC 2011. We hope you enjoy the technical program and have a great time in Orlando.

DEJING DOU AND YU WANG,
TECHNICAL PROGRAM CO-CHAIRS,
IEEE IPCCC 2011

PROGRAM GUIDE CONTENTS

Page 2: Welcome Messages
Page 3: 2011 Executive Committee / 2012 IPCCC Board / Technical Program Committee
Page 4: IPCCC Program Schedule, Thursday, November 17 (Registration at 8:30 a.m.)
Page 5: IPCCC Program Schedule, Friday, November 18 (Registration at 8:30 a.m.) / Reception and Poster Session Information (Starts at 4:30 p.m.)
Page 6: IPCCC Program Schedule, Saturday, November 19 (Registration at 8:30 a.m.) / 2011 Workshop Information
Page 7: Keynote Speech – Abstract and Author Information
Page 8: Call for Papers for the 31st Annual IEEE IPCCC 2012

THE FLORIDA HOTEL & CONFERENCE CENTER AT THE FLORIDA MALL

Located at The Florida Mall, the 511 room Florida Hotel and Conference Center offers amenities not available at most hotels – including in-room spa treatments, and a Starbucks in the lobby. Located just minutes from the Orlando International Airport, the Orange County Convention Center, and Walt Disney World Resort.

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More details about the hotel can be found at their website: thefloridahotelorlando.com/
**EXECUTIVE COMMITTEE**

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**TECHNICAL PROGRAM COMMITTEE**

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**IPCCC BOARD (STEERING COMMITTEE)**

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### Session 1A: Wireless Networks I

**Chair:** Bo Sheng (University of Massachusetts Boston, USA)

**Multi-Rate Adaptation with Interference and Congestion Awareness**  
Duy D Nguyen, J.J. Garcia-Luna-Aceves (University of California at Santa Cruz, USA); Cedric Westphal (Docomo Labs USA, USA)

**Performance Modeling of Energy Efficient Wireless Nodes**  
Agnieszka Lezanska, Muhammad Hayat (Technical University Vienna, Austria)

**JRCA: A Joint Routing and Channel Assignment Scheme for Wireless Mesh Networks**  
Amitangshu Pal, Asis Nasipuri (University of North Carolina at Charlotte, USA)

### Session 1B: Cloud Computing and Parallel Systems

**Chair:** Qishi Wu (University of Memphis, USA)

**ARA: Adaptive Resource Allocation for Cloud Computing Environments under Bursty Workloads**  
Jianzhe Tai, Juemin Zhang, Jun Li, Waleed Meleis, Ningfang Mi (Northeastern University, USA)

Ziming Zhang, Song Fu (University of North Texas, USA)

**Enhancing I/O Throughput via Efficient Routing and Placement for Large-scale Parallel File Systems**  
David Dillow, Galen Shipman, Sarp Oral (Oak Ridge National Lab, USA); Zhe Zhang (IBM T. J. Watson Research Center, USA); Youngjae Kim (Oak Ridge National Lab., USA)

**A Distributed Workflow Management System with Case Study of Real-life Scientific Applications**  
Qishi Wu (University of Memphis, USA); Mengxia Zhu (Southern Illinois University Carbondale, USA); Yi Gu (University of Tennessee at Martin, USA); Xukang Lu (University of Memphis, USA); Patrick Brown (Southern Illinois University, USA); Michael Reuter, Stephen Miller (Oak Ridge National Lab., USA)

### Session 1A / 1B: 10:30 A.M. - 12:10 P.M.

### Lunch: Salon 3, Noon - 1:30 P.M.

### Session 2A: Sensor Networks I

**Chair:** Yu Wang (University of North Carolina at Charlotte, USA)

**Minimum Latency Scheduling for Multi-Regional Query in Wireless Sensor Networks**  
Mingyuan Yan, Jing (Selena) He, Shouling Ji, Yingshu Li (Georgia State University, USA)

**A Simple Myopic Mobile Sink Strategy for Wireless Sensor Networks**  
Young-Hun Kim, Keon-Taek Lee, Semin Sim, Seung-Jae Han (Yonsei University, Korea)

**Web-based Heterogeneous WSN Integration using Pervasive Communication**  
Mihaela Cardei, Anthony M Marcus, Ionut Cardei, Timur Tavilov (Florida Atlantic University, USA)

**An Energy Efficient and Integrity-Preserving Aggregation Protocol in Wireless Sensor Networks**  
Liehuang Zhu, Meng Li (Beijing Institute of Technology, China)

### Session 2B: Computer Systems

**Chair:** Xiao Qin (Auburn University, USA)

**Network Coding in Multicore Processors**  
Thuan Duong-Ba, Thinh Nguyen, Patrick Chiang (Oregon State University, USA)

**Reliability Analysis of An Energy-Aware RAID System**  
Shu Yin, Yun Tian, Jiong Xie, Xiao Qin (Auburn University, USA); Mohammed Alghamdi (Al-Baha University, Kingdom of Saudi Arabia); Xiaojun Ruan (West Chester University of Pennsylvania, USA); Meikang Qiu (University of Kentucky, USA)

**Energy-Efficient Elastic Scheduling in Heterogeneous Computing Systems**  
Xiaomin Zhu, Chuan He, Jianjiang Wang (National University of Defense Technology, China)

**Explicit Moving Particle Semi-implicit method on GPU clusters**  
Denis Taniguchi, Liria Sato (University of Sao Paulo, Brazil)

### Session 2A / 2B: 1:30 - 3:10 P.M.

### Break: 3:10 - 3:30 P.M.

### Session 3A: Internet

**Chair:** Dejing Dou (University of Oregon, USA)

**A Subscription Overlay Network for Large-scale and Cost-efficient Any Source Multicast**  
Patricio Galdames (Iowa State University, USA); Qinghua Zheng (Xi’an Jiaotong University, China); Ying Cai (Iowa State University, USA)

**Subnet Level Network Topology Mapping**  
Mehmet Engin Tozal, Kamli Sarac (University of Texas at Dallas, USA)

**Using Spikes to Deal with Elephants**  
Dilil Mon Divakaran (IIT Mandi, India)

**An Efficient SVM-based Method for Multi-Class Network Traffic Classification**  
Ning Jing, Ming Yang, Shaoyin Cheng, Qunfeng Dong (University of Science and Technology of China, China); Hui Xiong (Rutgers University, USA)

### Session 3B: Fundamental Theory

**Chair:** Aleks Penttinen (Aalto University, Finland)

**Dynamic Data Allocation with Replication in Distributed Systems**  
Shahin Kamali, Pedram Ghodsnia, Khuzaima Daudjee (University of Waterloo, Canada)

**Optimizing Energy Consumption Under Flow and Stretch Constraints**  
Zhi Zhang, Fei Li (George Mason University, USA)

**Energy-aware Dispatching in Parallel Queues with On-Off Energy Consumption**  
Aleksi Penttinen, Esu Hyytis, Samuli Aalto (Aalto University, Finland)

**Using Hidden Convexity in Structured Communication Problems**  
Tharwat Morsy (Dortmund University of Technology, Germany); Jyrgen Gatz (TU Dortmund University, Germany); Hamed Nassar (Suez Canal University, Egypt)

*Short Papers*
IPCCC SCHEDULE, FRIDAY, NOVEMBER 18, 2011

REGISTRATION: 8:30 A.M., SALON I
KEYNOTE ADDRESS II: 9 - 10 A.M.
SOCIAL-WARE NETWORKS: OPPORTUNISTIC MOBILE NETWORKS
PROFESSOR GUOHONG CAO, PENNSYLVANIA STATE UNIVERSITY, IEEE FELLOW

BREAK – 10 - 10:20 A.M.

SESSION 4A / 4B: 10:20 A.M. - 12:10 P.M.

SESSION 5A: WIRELESS NETWORKS II
Chair: Asis Nasipuri (University of North Carolina at Charlotte, USA)
Fuzzy-based Adaptive Cross Layer Routing Protocol for Mobile Ad hoc Networks
Cherine Faty (Arab Academy for Science and Technology and Maritime Transport, Egypt); Mahmoud T El-Hadidi (Cairo University, Egypt); Mohamad Abou El-Nasr (Arab Academy for Science and Technology, Egypt)

Generalized Broadcast Scheduling in Duty-Cycle Multi-Hop Wireless Networks
Yueming Duan, Shouling Ji, Zhipeng Cai (Georgia State University, USA)

Cooperative Optimal Pricing for Stochastic Access Control in Heterogeneous Wireless Networks
Haoran Zhang, Liusheng Huang, Hongli Xu (University of Science and Technology of China, China)

A Case for Packet Deflection in Structured Wireless Topologies
Maulik Desai, Nick Maxemchuk (Columbia University, USA)

LUNCH: SALON 3, 12:10 - 2 P.M.

SESSION 5A / 5B: 2 - 4 P.M.

SESSION 4B: P2P AND STREAMING SYSTEMS
Chair: Mea Wang (University of Calgary, Canada)

How P2P Live Streaming Systems Scale Quickly under a Flash Crowd?
Haibo Wu, Hai Jiang (Institute of Computing Technology, Chinese Academy of Sciences, China); Jing Liu (Inner Mongolia University, China); Yi Sun, Jun Li, Zhongcheng Li (Institute of Computing Technology, Chinese Academy of Sciences, China)

Adaptive Neighbor Management for Cooperative P2P Video-on-Demand Streaming
Jung Ki So, Douglas Reeves (North Carolina State University, USA)

Can P2P Help the Cloud Go Green?
Christopher Jarabek, Mea Wang (University of Calgary, Canada)

Fulfilling End-to-End Latency Constraints in Large-scale Streaming Environments
Stamatia Rizou, Frank DŸrr, Kurt Rothermel (University of Stuttgart, Germany)

SESSION 5B: SECURITY
Chair: Yi Gu (University of Tennessee at Martin, USA)

Making Eclipse Attacks Computational Infeasible in Large-Scale DHTs
Ren Zhang, Jianyu Zhang, Yu Chen, Nanhao Qin, Binghuang Liu, Yuan Zhang (Peking University, China)

Resource-Misuse Attack Detection in Delay-Tolerant Networks
Vivek Natarajan (Pennsylvania State University, USA); Yi Yang (Catholic University of America, USA); Sencun Zhu (Pennsylvania State University, USA)

DoS Resilience of Real Time Streaming Protocol
Nihat Altiparmak, Ali Tekeoglu, Ali Saman Tosun (University of Texas at San Antonio, USA)

Non-interactive OS Fingerprinting through Memory De-duplication Technique in Virtual Machines
Rodney Owens, Weichao Wang (University of North Carolina at Charlotte, USA)

BREAK: 4 - 4:30 P.M.

RECEPTION AND POSTER SESSION: SALON 3, 4:30 - 6:30 P.M.

POSTER SESSION
Chair: Tingting Chen (Oklahoma State University, USA)

Power and Energy Consumption Analysis on Intel SCC Many-Core System
– Pollawat Thanarungroj, Chen Liu (Florida International University, USA)

A SOA-based Framework for Cross-layer QoS Adaptation in Next Generation Networks
– Gordana Gardasevic (Faculty of EE, Bosnia and Herzegovina), Dejan Sljepanovic (City Administration of Banjaluka, Bosnia and Herzegovina), Aleksandar Damjanovic (LANACO IT, Bosnia and Herzegovina), Dejan Civjanovic (Faculty of EE, Bosnia and Herzegovina)

QoS Assurance in MANETs Using Flow Aware Admission Control-Multipath Protocol
– Muhammad Asif, Zhili Sun, Haihaim Cruickshank, Naveed Ahmad (University of Surrey, United Kingdom)

Evaluation of Process Level Redundant Checkpointing/Restart for HPC Systems
– Ifeanyi Egwutuoha, David Levy (University of Sydney, Australia), Bran Selic (Malina Software Corp., Canada)

GNAED: A Data Mining Framework for Network-wide Abnormal Event Detection in Backbone Networks
– Yingjie Zhou, Guangmin Hu (University of Electronic Science and Technology of China, China)

Underlay-Robust Application Layer Multicast
– Mathias Fischer (Ilmenau University of Technology, Germany), Sebastian Delling (Computer Networks, Network Security, Germany), Sascha Grau, Guenter Schaefer (Technische Universitaet Ilmenau, Germany)

VM Clock Synchronization Measurements
– Jagmohan Chauhan, Dwight Makaroff, Anthony Arkes (University of Saskatchewan, Canada)

A QoS based Handover Decision (Nearest Performance Handover) Algorithm for Next Generation Networks
– Fazal Karam (Norwegian University of Science and Technology, Norway), Terje Jensen (Telenor, Norway)

Adaptation-Based Programming for Network Protocol Design: An 802.11x Case Study
– Fangyu Zhu, Jervis Pinto, Alan Fern, Thinh Nguyen (Oregon State University, USA)

CUDA Acceleration of P7Viterbi Algorithm in HMMER 3.0
– Saddam Quirem, Fahlan Ahmed, Byeong KI Lee (University of Texas at San Antonio, USA)

Real Time Video QoE Analysis of RTMP Streams
– Holly French, Jie Lin, Tung Phan, Amy Caizmar Dalal (Carleton College, USA)

*Short Papers
In the last few years, wireless networks have experienced an explosive growth. The advanced wireless network technologies have been widely adopted in a broad spectrum of applications, including electronic healthcare systems, pervasive communications, vehicular networks, mobile wireless peer-to-peer networks, among many others. The security and privacy issue is a central concern to guarantee the functions and performance of such important wireless network applications. This workshop aims to bring together researchers and practitioners from the communities of wireless networking, security, data privacy and cryptography, to promote discussions and research on hot new topics in these areas and out-of-the-box ideas that can generate a discussion and controversy. We are interested in novel and exciting research on all aspects of security and privacy in wireless networks.
Thursday, November 17
9:10 - 10:10 A.M.

A FEW SELECTED RESEARCH ISSUES IN WIRELESS NETWORK MODELING, ANALYSIS AND DESIGN

PROFESSOR YUGUANG "MICHAEL" FANG, UNIVERSITY OF FLORIDA, IEEE FELLOW

Abstract:
Wireless and mobile networks have gone a long way to offer the convenience we have enjoyed today. Obviously, performance optimization and design have played a significant role. As we observe, tremendous efforts have been made in developing viable analytical or simulation tools in assessing the network performance, ranging from coverage, connectivity and capacity to service performance optimization and resource efficiency. Yet, more than often, there exists a tremendous gap between the theory and practice in performance modeling and optimization. In this talk, the speaker will select a few research problems to discuss such mismatch and highlight some research challenges ahead in wireless networking research.

Speaker’s Biography:
Yuguang "Michael" Fang (F’08) received a Ph.D. degree in Systems Engineering from Case Western Reserve University in January 1994 and a Ph.D. degree in Electrical Engineering from Boston University in May 1997. He was an assistant professor in the Department of Electrical and Computer Engineering at New Jersey Institute of Technology from July 1998 to May 2000. He then joined the Department of Electrical and Computer Engineering at University of Florida in May 2000 as an assistant professor, got an early promotion to an associate professor with tenure in August 2003 and to a full professor in August 2005. He holds a University of Florida Research Foundation (UFRF) Professorship from 2006 to 2009, a Changjiang Scholar Chair Professorship with Xidian University, Xi’an, China, from 2008 to 2011, and a Guest Chair Professorship with Tsinghua University, China, from 2009 to 2012. He has published over 300 papers in refereed professional journals and conferences. Dr. Fang received the National Science Foundation Faculty Early Career Award in 2001 and the Office of Naval Research Young Investigator Award in 2002, and is the recipient of the Best Paper Award in IEEE International Conference on Network Protocols (ICNP) in 2006 and the recipient of the IEEE TCGN Best Paper Award in the IEEE High-Speed Networks Symposium, IEEE Globecom in 2002. He has also received 2011 Florida Blue Key/UF Homecoming Celebration of Education Distinguished Faculty Award, the 2010-2011 UF Doctoral Dissertation Advisor/Mentoring Award and the 2009 UF College of Engineering Faculty Mentoring Award.

Dr. Fang is also active in professional activities. He is a Fellow of IEEE and a member of ACM. He is currently serving as the Editor-in-Chief for IEEE Wireless Communications (2009-present) and serves/has served on several editorial boards of technical journals including IEEE Transactions on Mobile Computing (2003-2008, 2011-present), IEEE Transactions on Communications (2000-present), IEEE Transactions on Wireless Communications (2002-2009), IEEE Journal on Selected Areas in Communications (1999-2001), IEEE Wireless Communications Magazine (2003-2009) and ACM Wireless Networks (2001-present). He served on the Steering Committee for IEEE Transactions on Mobile Computing (2008-2010). He has been actively participating in professional conference organizations such as serving as the Technical Program Co-Chair for IEEE INFOCOM’2014, the Steering Committee Co-Chair for QShine (2004-2008), the Technical Program Vice-Chair for IEEE INFOCOM’2005, the Technical Program Area Chair for IEEE INFOCOM (2009-2012), Technical Program Symposium Co-Chair for IEEE Globecom2004, and a member of Technical Program Committee for IEEE INFOCOM (1998, 2000, 2003-2008).

Friday, November 18
9 - 10 A.M.

SOCIAL-AWARE DATA DISSEMINATION IN OPPORTUNISTIC MOBILE NETWORKS

PROFESSOR GUOHONG CAO, PENNSYLVANIA STATE UNIVERSITY, IEEE FELLOW

Abstract:
In opportunistic mobile networks, mobile devices communicate with each other through opportunistic contacts; i.e., moving into the communication range of each other. The major advantage of opportunistic mobile network is that it does not rely on any infrastructure, and thus it is widely used in battlefield, disaster recovery, environmental monitoring, inter-vehicle communication, etc. Due to the low node density and unpredictable node mobility, the network topology is highly dynamic and end-to-end connections are hard to maintain.

To deal with these problems, researchers adopt the idea of carry and forward, where nodes carry the data packet when routes do not exist, and forward the packet to a relay that moves into its vicinity. Then, the key problem for data access/dissemination becomes how to determine the appropriate relay selection strategy, and many researchers design different metrics for choosing the relays. In this keynote, I will talk about the challenges and solutions of applying social network concepts to data dissemination, and how to exploit social contact patterns, social interest and social relationship to improve the performance of data dissemination.

Speaker’s Biography:
Guohong Cao received a Bachelor of Science degree from Xian Jiaotong University, China. He received the Master of Science degree and Ph.D. degree in computer science from Ohio State University in 1997 and 1999 respectively. Since then he has been with the Department of Computer Science and Engineering at Pennsylvania State University, where he is currently a professor. His research interests are wireless networks and mobile computing.

Professor Guohong has published more than 150 papers in the areas of cache management, data access and dissemination, wireless sensor networks, wireless network security, vehicular ad hoc networks and distributed fault tolerant computing. He has served on the editorial board of IEEE Transactions on Mobile Computing, IEEE Transactions on Wireless Communications, IEEE Transactions on Vehicular Technology, and has served on the organizing and technical program committees of many conferences. He was a recipient of the NSF CAREER award in 2001, He is a Fellow of the IEEE.
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