22nd International Conference
on Computer Communications and Networks
ICCCN 2013

Nassau, Bahamas

July 30 - August 2, 2013

Conference Proceedings

Message from the General Chair

It is my great pleasure to welcome you to the International Conference on Computer Communications and Networks (ICCCN 2013) which takes place in beautiful Nassau, Bahamas on July 30 – August 2, 2013. It has been a real honor and privilege to serve as the General Chair of the conference.

Over the past twenty-two years, ICCCN has provided a cross-disciplinary venue for researchers and practitioners to address the rich space of communications and networking research and technology. This year, the program spans four days and includes one day of thematic workshops followed by three days of the main conference. The three Keynote presentations, three Panels, and planned social events will provide ample opportunities for discussions, debate, and exchange of ideas and information among conference participants.

The conference would not have been possible without the enthusiastic and hard work of a number of colleagues. We would like to express our appreciation to the Technical Program Chairs, Christian Poellabauer and Fan Zhai, for their valuable contribution in assembling the high quality conference program. We also thank the Workshop General Co-Chairs, Kewei Sha and Aaron Striegel, the Publicity Co-Chairs, Liqiang Zhang, Xinbing Wang, and Kyriakos Vlachos, the Student Travel Grant Co-Chairs, Nadine Shillingford and Chris Miller, the Publication Chair, Guido Maier, and the individual track and workshop chairs. A conference of this size relies on the contributions of many volunteers, and we would like to acknowledge the efforts of our TPC members and referees and their invaluable help in the review process. We are also grateful to all the authors who trusted the conference with their work.

Special thanks to the Keynote Speakers, Drs. Muriel Medard, Jack Brassil, and Admela Jukan, and the Panel Moderators, Drs. Malathi Veeraraghavan, Tilman Wolf, and Ilya Baldin, and all the panelists for sharing their views on current research topics. We appreciate the support of our sponsors, the IEEE Communications Society and NSF. We also thank Dr. E. K. Park, Chair of the ICCCN steering committee, for his vision and leadership.

We look forward to an exciting week of insightful presentations, discussions, and sharing of technical ideas with colleagues from around the world. We thank you for attending the conference and we hope that you enjoy your visit to the Bahamas.

George Rouskas, *North Carolina State University, USA*
ICCCN 2013 General Co-Chair

Message from the Technical Program Chairs
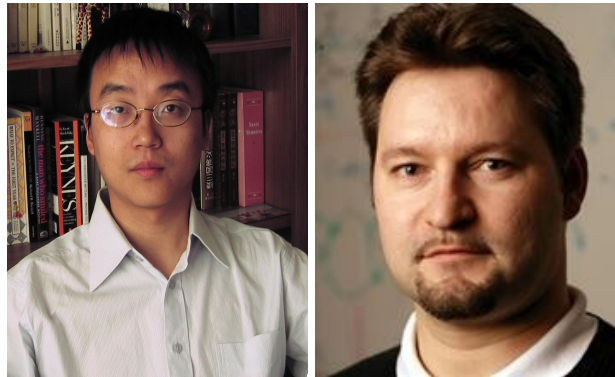
Welcome to ICCCN 2013!

The ICCCN conference has established itself as a worldwide reference for the dissemination of high-quality research in all aspects of computer communications and networking, and for fostering interaction and exchange of ideas.

ICCCN 2013 was fortunate to attract a high interest among the community, and the main conference received 300 submissions from 33 countries in five continents. The submissions span 11 tracks. The high number of submissions provided an excellent opportunity for a high-quality program, but also called for a demanding and laborious paper evaluation process. The 337 members of the Technical Program Committee worked efficiently and responsibly under tight time constraints to produce at least three reviews for each paper that provided the basis for the final paper selection.

The reviewing and selection process led to 86 regular papers and 9 invited papers for the main conference, resulting in an acceptance rate of 31%. Given the large number of submitted manuscripts and the tight time and space constraints, many strong submissions could not be accepted. To allow the conference participants to benefit from further worthwhile and stimulating research results, 30 papers were accepted for presentation at the workshops co-located with the main conference.

The main program of ICCCN 2013 covers three days and includes streams of up to four parallel sessions. The program is further enriched by three keynote presentations offered by world-renowned researchers in the field, and three plenary panel discussions that address topics in data center networks, future network architectures, and software-defined networking and network virtualization. The main program is complemented by a diverse set of high-quality workshops.

We are grateful to all authors who trusted us with their work; without them there would be no conference. The final result would not have been possible without the dedication and hard work of many colleagues. Special thanks are due to the track chairs, workshop chairs, the members of the Technical Program Committees, the General Chair, and to all external referees for the quality and depth of the reviews, and their sense of responsibility and responsiveness under very tight deadlines.

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Message from the Workshop General Chairs
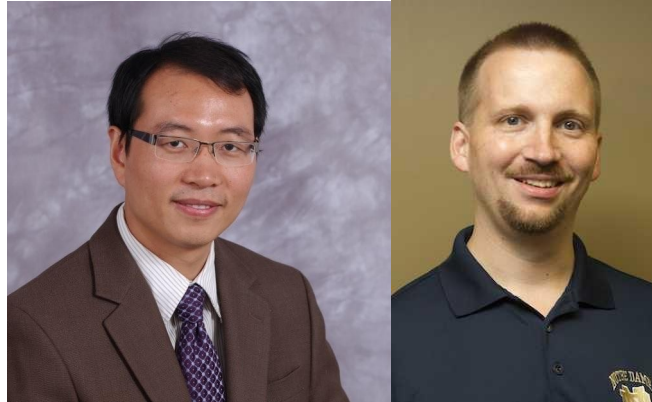
Welcome to the ICCCN 2013 Workshops! As an integral part of the main conference, the ICCCN workshop program provides international forums for scientists and engineers from academia and industry to exchange and share their experiences, research results, and new ideas on hot and emerging topics on computer communications and networks. This year we enjoyed the great privilege to have worked with researchers across the world in organizing five workshops covering a variety of topics in the area of computer communications and networks. These workshops are:

- WiMAN – Wireless Mesh and Ad Hoc Networks
- PMECT – Performance Modeling and Evaluation of Computer and Telecommunication Networks
- MobiPST – Privacy, Security and Trust in Mobile and Wireless Systems
- ContextQoS – Context-Aware QoS Provisioning and Management for Emerging Networks, Applications and Services
- SN – Sensor Networks

We would like to thank all the workshop organizers for their leadership and hard work in putting together these excellent workshops. Organizing a workshop is a great contribution to the research community and it requires tremendous effort. We want to thank all workshop committee members and external reviewers for the time dedicated to reviewing the submitted papers. We are also grateful to all authors and invited speakers for contributing their work to these workshops. Many thanks are due to ICCCN General Chair Prof. George Rouskas and the ICCCN Program Co-Chairs Dr. Fan Zhai and Prof. Christian Poellabauer for their support and help on numerous aspects of the workshops. We also thank Publicity Chair Prof. Liqiang Zhang for his support and dedication. Finally, we would like to thank the Steering Committee Chair, Dr. E. K. Park, for his vision and dedication to maintaining ICCCN as a premiere international conference in computer communications and networks.

Kewei Sha, *Oklahoma City University, USA*
Aaron Striegel, *University of Notre Dame, USA*
ICCCN 2013 Workshop Co-Chairs

Message from the WiMAN 2013 Chair

Welcome to the Seventh International Workshop on Wireless Mesh and Ad Hoc Networks (WiMAN 2013), which is held in conjunction with the 22nd International Conference on Computer Communications and Networks (ICCCN 2013), Nassau, Bahamas, July 30, 2013.

The goal of this workshop is to bring together the technologies and researchers who share interest in the area of wireless mesh and ad hoc networks. Its purpose is to promote discussions of research and relevant activities in the design of architectures, protocols, algorithms, services, and applications for wireless mesh and ad hoc networks. Also, this workshop aims at increasing the synergy between academic and industry professionals working in this area.

This international workshop collected research papers on the above research issues from several countries of the world, such as China, Cyprus, Germany, and USA. Papers collected in this international workshop were rigorously reviewed by the scientific program committee members. According to the review results, the program committee members have selected 11 high quality papers to be presented in this workshop. Also, the program includes a Keynote Speech, titled "Fast and Accurate Indoor Localization," which will be given by Dr. Duc Tran (University of Massachusetts Boston, USA). Authors of the distinguished papers will be invited to submit the extended versions of their papers for a special issue of the Elsevier Journal of Computer and System Sciences (JCSS).

Many people have kindly helped us to prepare and organize WiMAN'13 workshop. First of all, we would like to thank the WiMAN'13 Organization and Technical Program Committee for their support, constructive feedback, and timely reviews. We would like to greatly appreciate the support we got from the IEEE ICCCN 2013 Workshop General Co-Chairs, Dr. Kewei Sha (Oklahoma City University, USA) and Dr. Aaron Striegel (University of Notre Dame, USA). Moreover, we are very thankful to the outstanding support we received from the Steering Committee members, Dr. Christian Poellabauer (University of Notre Dame, USA) and Dr. Liqiang Zhang (Indiana University South Bend, USA). Finally, we also would like to take opportunity to thank all external reviewers and contributing authors for producing high-quality papers to be presented at WiMAN'13.

Habib M. Ammari, *University of Michigan-Dearborn, USA*
WiMAN'13 Workshop Chair

Message from the PMECT 2013 Co-chairs

Welcome to the 7th International Workshop on Performance Modelling and Evaluation in Computer and Telecommunication Networks (PMECT-2013) in conjunction with The 22nd International Conference on Computer Communications and Networks (ICCCN-2013) on 30th July to 2nd August 2013 in Nassau, Bahamas.

The purpose of this workshop is to provide an international forum for researchers and industry practitioners to present their state-of-art research on performance modelling and evaluation studies in all aspects of computer and telecommunication networks and to exchange ideas and explore new avenues of collaborations.

This international workshop collected research papers on the above research issues from various countries. Papers collected in this international workshop were rigorously reviewed by the scientific programme committee members. According to the review results, the program committee members have selected 6 high quality papers to be presented in this workshop.

Many people have kindly helped us to prepare and organize the PMECT workshop. First of all, we would like to thank the ICCCN-2013 organization committee for their support, guidance, and help for organising and promoting this workshop to attract quality papers. We would also like to take opportunity to thank all the members of the PMECT workshop organizing committee and program committee members for reviewing papers in time and proving useful comments to authors of the papers submitted to PMECT.

Prof. Irfan Awan, *University of Bradford, UK*
Dr. Lin Guan, *Loughborough University, UK*
Dr. Xingang Wang, *Coventry University, UK*
General Co-Chairs

Danish Aziz, *Alcatel-Lucent Bell Labs, Germany*
Program Chair

Peter Bull, *Loughborough University, UK*
Publicity Chair

Message from the MobiPST 2013 Co-chairs

It is our pleasure to welcome all of you to the 3rd International Workshop on Privacy, Security and Trust in Mobile and Wireless Systems (MobiPST 2013) in conjunction with the 22nd International Conference on Computer Communications and Networks (ICCCN 2013), July 30 - August 2, 2013, in Nassau, Bahamas.

Mobile wireless devices have become pervasive and attracted significant interest from academia, industry, and standardization organizations. With the latest cloud computing technology, those mobile wireless devices will play a more and more important role in the computing and communication. When those devices become pervasive, security, privacy and trust become critical components for the acceptance of applications build based on those devices. Moreover, the several favorable characteristics of mobile and wireless devices, including portability, mobility, and sensitivity, further impose the challenge the security and privacy in those systems. Despite recent advances, many research issues remain in the design of secure, privacy-preserving, or trust architectures, protocols, algorithms, services, and applications on mobile and wireless systems. For example, when the mobile devices have more storage space, high bandwidth, and super sensing capability, more sensitive information will be stored in those devices. On the other hand, the operating systems on those devices are not as powerful and reliable as those on traditional computers. Both OS layer and higher layer protocols are expected to enhance the security and preserve privacy of those devices. With more mobile devices being used in social network and regular online activities, novel trust models are essential for the new applications. New cryptography algorithms, key distribution schemes and access control policies are also encouraged by considering the special characteristics of mobile and wireless devices. Other issues such as false detection, attack models, security analysis, and anonymity techniques are required to be revisited in mobile and wireless systems.

This workshop aims to bring together the technologists and researchers who share interest in the area of security, privacy and trust in mobile and wireless systems, as well as explore new venues of collaboration. The main purpose is to promote discussions of research and innovative implementation activities in the design of secure, privacy-preserving, or trust architectures, protocols, algorithms, services, and applications on mobile and wireless systems. It also aims at increasing the synergy between academic and industry professionals working in this area.

This international workshop attracted research papers from various countries across the world, which were rigorously reviewed by the scientific program committee members and invited reviewers. We take this opportunity to thank them for their professionalism and valuable comments made to the authors.

As a result, 7 papers were selected for publication. Many people have kindly helped us to prepare and organize the MobiPST 2013 workshop. First of all, we would like to thank ICCCN 2013 organization committee for their support, guidance, and help for making the workshop a successful event. Also, we would like to give our special thanks to all who helped and contributed to the success of this workshop. Finally, we would also like to thank all the authors for selecting the MobiPST 2013 workshop to submit their contribution.

Zhengping Wu, *University of Bridgeport, USA*
Yafei Yang, *Qualcomm Inc., USA*
MobiPST 2013 Workshop Co-Chairs

Message from the ContextQoS 2013 Co-chairs

Welcome to the Third International Workshop on Context-aware QoS Provisioning and Management for Emerging Networks, Applications and Services (ContextQoS 2013) in conjunction with the 22nd International Conference on Computer Communications and Networks (ICCCN-2013) on July 30th to August 2nd, 2013 in Nassau, Bahamas.

The purpose of this workshop is to bring together researchers and industry practitioners to present and discuss novel approaches and solutions as well as recent results in the field of context-aware QoS provisioning and management for emerging networks, applications and services and to exchange ideas and explore new avenues of collaborations.

This workshop collected research papers on the above research issues from several countries. Papers collected in this international workshop were rigorously reviewed by the scientific programme committee members. According to the review results, the program committee members have selected seven high quality papers to be presented in this workshop.

Many researchers from all over the world have kindly helped us to prepare and organize the ContextQoS workshop. First of all, we would like to thank the ICCCN-2013 organization and technical program committee for their support, constructive feedback, and timely proposal review. We would like to greatly appreciate the support we got from the ICCCN 2013 workshop-co-chairs, Kewei Sha, Oklahoma City University, USA, and Aaron Striegel, University of Notre Dame, USA. Finally, we also would like to take opportunity to thank all external reviewers and contributing authors for producing high quality papers to be presented at ContextQoS 2013.

Dr.-Ing. Patrick-Benjamin Bök, *TU Dortmund University, Germany*
Prof. Dr. Nader F. Mir, *San Jose State University, USA*
Prof. Dr.-Ing. Dipl.-Wirtsch.-Ing. York Tüchelmann, *Ruhr-University Bochum, Germany*
ContextQoS-2013 Workshop Organizing Chairs

Message from the SN 2013 Co-chairs

Welcome to the Sixth International Workshop on Sensor Networks (SN 2013), which is being held in conjunction with the 22nd International Conference on Computer Communications and Networks (ICCCN 2013).

The purpose of the workshop is to provide a forum for researchers and practitioners in sensor networks and related fields to exchange ideas and research results. The workshop has received many submissions and each paper received typically three reviews from the Technical Program Committee (TPC) members. The workshop advanced program is a result of the review process. Extensions of selected best papers will be recommended for possible publication in the International Journal of Sensor Networks (IJSNet).

Many people have made contribution to the workshop. First and foremost, we would like to thank the authors who expressed interests and submitted their papers to the workshop. Their efforts have been the driving force of the sensor network research and development. We would like to express our deepest gratitude to the TPC members, who provided timely reviews for the papers despite the tight schedule. We are very grateful to the ICCCN 2013 organizing committee, in particular, the ICCCN 2013 Workshops Co-Chairs, Dr. Kewei Sha, Oklahoma City University, USA and Dr. Aaron Striegel, University of Notre Dame, USA, for their outstanding leadership. To summarize, we are sincerely appreciative to all who have supported us and contributed to this workshop in one way or the other. The workshop could not be successful without their contribution.

David Hung-Chang Du, *University of Minnesota, USA*
Yang Xiao, *University of Alabama, USA*
SN 2013 General Co-Chairs

Hui Chen, *Virginia State University, USA*
Ming Li, *California State University, Fresno, USA*
SN 2013 Technical Program Committee Co-chairs

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●—Habib M. Ammari, University of Michigan-Dearborn, USA

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●—Amiya Nayak, SITE, University of Ottawa, Canada
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●—Dr. Xingang Wang, Coventry University, UK

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Technical Program Committee

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- Prof. Dr. Nader F. Mir, San Jose State University, USA
- Prof. Dr.-Ing. Dipl.-Wirtsch.-Ing. York Tüchelmann, Ruhr-University Bochum, Germany

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SN Organizing Committee

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- Yang Xiao, University of Alabama, USA

Technical Program Committee Co-Chairs

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- Hui Chen, Virginia State University, USA

Technical Program Committee

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- Shibo He, Arizona State University

Technical Program Overview

Tuesday, July 30th, 2013 – Workshops

	Room Independence A	Room Independence C	Room Arawak A/B
9:00-10:15	**ContextQoS 1: Keynote**		**WiMAN 1: Keynote**
10:15-10:45	Coffee Break	Coffee Break	Coffee Break
10:45-12:15	**ContextQoS 2** **Adaptive QoS Provisioning**	**SN** **Sensor Networks**	**WiMAN 2** **Wireless and Mobile Ad-hoc Networks**
12:15-13:30	Lunch	Lunch	Lunch
13:30-15:00	**ContextQoS 3** **Context-aware QoS for Networking Applications**	**MobiPST** **Mobile Privacy & Security**	**WiMAN 3** **Optical, Sensor, and Application-Oriented Networks**
15:00-15:30	Coffee Break	Coffee Break	Coffee Break
15:30-17:30	**PMECT** **Networked System Performance**		**WiMAN 4** **Mesh Networks, Wireless LANs, and Clouds**

Wednesday, July 31st, 2013 – Main Conference

	Room Independence B	Room Independence A	Room Independence C	Room Arawak A/B
8:30-8:50	**Opening Remarks**			
8:50-10:15	**Keynote I: Placing Network Coding in the Network Speaker: Muriel Médard, MIT, USA**			
10:15-10:45	Coffee Break	Coffee Break	Coffee Break	Coffee Break
10:45-12:15	**Invited Paper Session -I**	**Routing and Network Services (NACSD I)**	**Transport Protocols (NAPE I)**	**Cloud Technology and Applications (GCC I)**
12:15-13:30	Lunch	Lunch	Lunch	Lunch
13:30-15:00	**Panel Discussion I: Data Center Networks Chair: Malathi Veeraraghavan, University of Virginia, USA**			
15:00-15:30	Networking Break	Networking Break	Networking Break	Networking Break
15:30-17:00	**WLAN and Mesh Networks (LAMN I)**	**Information-Centric Networks and Security (NACSD II)**	**Packet Scheduling (NAPE II)**	**High Performance Networks (GCC II)**
18:00-20:30	Conference Reception (Pool Deck)	Conference Reception	Conference Reception	Conference Reception

Thursday, August 1st - Main Conference

	Room Independence B	Room Independence A	Room Independence C	Room Arawak A/B
8:50-10:15	**Keynote II: Locating Mobile Devices Indoors: Opportunities, Theory, and Practice Speaker: Jack Brassil, Hewlett-Packard Laboratories, USA**			
10:15-10:45	Coffee Break	Coffee Break	Coffee Break	Coffee Break
10:45-12:15	**Invited Paper Session -II**	**Routing and Cross-Layer Design (SEP I)**	**Internet, Network Protocols, and Performance (NAPE III)**	**Cognitive Radio Networks (CCHN I)**
12:15-13:30	Lunch	Lunch	Lunch	Lunch
13:30-15:00	**Panel Discussion II: Trends in Network Architecture Chair: Tilman Wolf, University of Massachussetts, USA**			
15:00-15:30	Networking Break	Networking Break	Networking Break	Networking Break
15:30-17:00	**RFID and Ad Hoc Networks (LAMN II)**	**Algorithm and Middleware (SEP II)**	**P2P and Content Distribution (NAPE IV)**	**Resource Allocation (CCHN II)**
17:00-17:15	Coffee Break	Coffee Break	Coffee Break	Coffee Break
17:15-18:45	**DTN and Miscellaneous Topics (LAMN III)**	**RFID, M2M Communications, and Social Sensing (SEP III+MCCN)**	**Multimedia and Networking (MRTM I+MCCN)**	**Physical Layer, Cellular Networks and Cognitive Radios (CCHN III)**
19:00-22:00	Dinner/Banquet/Awards (Western Beach)	Dinner/Banquet/ Awards	Dinner/Banquet/ Awards	Dinner/Banquet/Awards

Friday, August 2nd - Main Conference

	Room Independence B	Room Independence A	Room Independence C	Room Arawak A/B
8:50-10:15	**Keynote III: Next Steps Towards Internet-Optical Service Convergence: A Network Management Perspective Speaker: Dr. Admela Jukan, Technische Universität Braunschweig, Germany**			
10:15-10:45	Coffee Break	Coffee Break	Coffee Break	Coffee Break
10:45-12:15	**Invited Paper Session -III**	**Security, Privacy, and Trust I (SPT I)**	**Streaming and Content Distribution Networking (SCDN I)**	
12:15-13:30	Lunch	Lunch	Lunch	Lunch
13:30-15:00	**Panel Discussion III: SDN and Network Virtualization Chair: Ilya Baldin, RENCI**			
15:00-15:30	Networking Break	Networking Break	Networking Break	Networking Break
	Scalable, Reliable, and Energy-Efficient Networks (SREN I)	**Security, Privacy, and Trust II (SPT II)**	**NACSD Tutorial: GENI**	
17:00-17:15	Concluding Remarks			

Technical Program

Workshops
Tuesday, July 30th

9:00—10:15

ContextQoS 1: Keynote

Room: Independence A
Title: "Performance Challenges in Networked Mobile Robot Systems"
Speaker: Dr. Patrick-Benjamin Bök, TU Dortmund University, Germany
Chair: Kewei Sha, Oklahoma City University, USA

Abstract: Networked mobile robot systems are used in various types of scenarios: Special types of mobile robot systems are used for precision farming. In other scenarios, mobile robot systems are used for public safety purposes in the case of disaster situations. Flying robot systems may be used to analyze a chemical plume on a wide area to get information used to predict the behavior of the plume after incidents to be able to alert the population. In most cases, not only one mobile robot system is used, but a couple of these systems to cooperatively support tasks like the ones mentioned before. For an efficient usage, these swarms of mobile robot systems build up a communication network to cover a wide area. Driven by the context of the scenarios, these mobile robot systems are used in, different requirements regarding their communication network exist and context-aware performance management becomes necessary. Context-aware performance management has many facets and, thus, tailored QoS schemes are required to provide an appropriate level of QoS for different types of scenarios, applications and services for mobile robot systems, considering different types of wireless technologies, multiple interface and more. This keynote will give an overview on different scenarios and their specific challenges regarding the performance in the communication networks of those mobile robot systems.

Biosketch: *Patrick-Benjamin Bök* received his B.Sc. (with honors) and his M.Sc. (with honors) at the Ruhr-University Bochum, Germany, both in Applied Computer Sciences, in 2006 and 2007, respectively. From 2007 to 2012 he was a research assistant and Ph.D. student at the Research Group for Integrated Information System in the Department of Electrical Engineering and Information Sciences at Ruhr-University Bochum, Germany, before he received his PhD (with honors). Since 2012 he is a senior scientist at the Communication Networks Institute (CNI) of the TU Dortmund University. At CNI, he is the head of "Highly Dynamic Networks, Wireless Robotics and Emergency Response Management" research group. He performs tutorials about technical improvements for computer networks and also about enterprise planning of computer networks.

WiMAN 1: Keynote

Room: Arawak A/B
Title: "Fast and Accurate Indoor Localization"
Speaker: Duc Tran, University of Massachusetts Boston, USA
Chair: Habib M. Ammari, University of Michigan-Dearborn, USA

Abstract: Indoor localization is often based on location fingerprinting. For good accuracy, the training set of sample fingerprints should be sufficiently large to be well-representative of the environment in terms of both spatial coverage and temporal coverage. As such, the computation required during the positioning phase can be expensive because we have to evaluate each new fingerprint against the training data repeatedly over time. It is desirable, therefore, to optimize computational efficiency, not just localization accuracy. Existing techniques are far from this goal due to their polarization toward only criterion. This talk introduces our recent findings on using spatially hierarchical learning and graph regularization methods to improve both accuracy and efficiency. Our results are better than the state of the art.

Biosketch: Dr. *Duc A. Tran* is Director of the Network Information Systems Laboratory (NISLab) in the Department of Computer Science at the University of Massachusetts at Boston, where he holds the title of Associate Professor effective September 2013. His research interests are in the areas of networking and distributed data systems, with current focus on data-centric and networking designs targeting social, sensing, storage, and search applications. He has received several

research funding awards from the National Science Foundation (NSF), a Best Paper Award at ICCCN 2008, and a Best Paper Recognition at DaWak 1999. Dr. Tran has engaged in many professional activities, serving as a Review Panelist for the NSF, Editor for the Journal on Parallel, Emergent, and Distributed Systems (2010-date) and ISRN Communications and Networking Journal (2010-date), Guest-Editor for the Journal on Pervasive Computing and Communications (2009), TPC Co-Chair for CCNet (2010, 2011), GridPeer (2009, 2010, 2011), and IRSN 2009, and TPC Vice-Chair for AINA 2007. He is a member of the Organizing Committee for the 2014 ACM Multimedia Conference, serving as History Preservation Chair. Dr. Tran obtained his PhD degree in Computer Science from the University of Central Florida where he was honored with the Order of Pegasus, the most prestigious award at the university. He is a Senior Member of the ACM and a Professional Member of the IEEE.

10:45—12:15

ContextQoS 2: Adaptive QoS Provisioning

Room: Independence A
Chair: Dr. Patrick-Benjamin Bök (TU Dortmund University, Germany)

Delays QoS for Bandwidth Provisioning
Hengky Susanto (University of Massachusetts Lowell, USA); Byung-Guk Kim (University of Massachusetts at Lowell, USA)

Dynamic Link Classification based on Neuronal Networks for QoS Enabled Access to Limited Resources
Sebastian Subik (TU Dortmund University, Germany); Dennis Kaulbars (TU Dortmund, Germany); Patrick-Benjamin Bök (TU Dortmund, Germany); Christian Wietfeld (TU Dortmund University, Germany)

Elastic Network Design and Adaptive Flow Placement in Software Defined Networks
Julius Mueller (Technische Universität Berlin, Germany); Andreas Wierz (Technische Universität Berlin, Germany); Dragos Vingarzan (Fraunhofer-FOKUS Institute, Germany); Thomas Magedanz (TU Berlin / Fraunhofer FOKUS, Germany)

SN : Sensor Networks

Room: Independence C
Chair: Carol Niznik (NW Systems, USA)

Energy and Accuracy Trade-Offs in Accelerometry-Based Activity Recognition
Ning Wang (University of Southampton, United Kingdom); Geoff V Merrett (University of Southampton, United Kingdom); Robert G Maunder (University of Southampton, United Kingdom); Alex Rogers (University of Southampton, United Kingdom)

Energy Efficient Wireless Vehicular-Guided Actuator Network
Imene Boudellioua (KAUST, Saudi Arabia); Basem Shihada (KAUST, Saudi Arabia)

Games of Timing Theoretical Protocol Development and Performance Analysis for Missile Defense
Carol Niznik (NW Systems, USA)

Opportunistic Direct Interconnection between Co-Located Wireless Sensor Networks
Teng Jiang (University of Southampton, United Kingdom); Geoff V Merrett (University of Southampton, United Kingdom); Nick Harris (University of Southampton, United Kingdom)

WiMAN 2: Wireless and Mobile Ad-hoc Networks

Room: Arawak A/B

Chair: Duc Tran (University of Massachusetts Boston, USA)

Throughput Performance Analysis for Hybrid Wireless Networks over Fading Channels
Xin Wang (University of Texas at Arlington, USA); Qilian Liang (University of Texas at Arlington, USA)

ERMINE: Enabling Range Queries in MANET with Information-Centric Networking
Matteo Varvello (Bell Labs, Alcatel-Lucent, USA); Jairo O Esteban (Bell Labs, Lucent Technologies, USA); Mark Smith (Alcatel-Lucent, USA); Lloyd Greenwald (LGS Innovations / Bell Labs, USA); Yang Guo (Bell Labs, Alcatel-Lucent, USA); Mary R Schurgot (LGS Bell Labs Innovations, USA)

DHTs for cluster-based ad-hoc networks employing multi-hop relaying
Bilal Zafar (Ilmenau University of Technology, Germany); Roman Alieiev (Ilmenau University of Technology, Germany); Liz Ribe-Baumann (Ilmenau University of Technology, Germany); Martin Haardt (Ilmenau University of Technology, Germany)

13:30—15:30

ContextQoS 3: Context-aware QoS for Networking Applications

Room: Independence A
Chair: Kalman Graffi (Universität Düsseldorf, Germany)

Continuous Gossip-based Aggregation through Dynamic Information Aging
Vitaliy Rapp (Technische Universität Darmstadt, Germany); Kalman Graffi (Universität Düsseldorf, Germany)

Architectural Blueprints of a Unified Sensing Platform for the Internet of Things
Vangelis Gazis (AGT Group (R&D) GmbH, Germany); Panayotis Kikiras (AGT Group (R&D) GmbH, Germany); Giorgos Mazarakis (AGT Group (R&D) GmbH, Germany); Nikolaos Frangiadakis (AGT Group (R&D) GmbH, Germany); Kostantinos Sasloglou (AGT Group (R&D) GmbH, Germany); Andreas Merentitis (AGT Group (R&D) GmbH, Germany); Kostas Mathioudakis (AGT Group (R&D) GmbH, Germany)

Context as a Service integrated service enabler integrated in the clouds
Oscar Rodríguez Rocha (Politecnico di Torino, Italy); Boris Moltchanov (Telecom Italia, Italy)

MobiPST: Mobile Privacy & Security

Room: Independence C
Chair: Geoff V Merrett (University of Southampton, United Kingdom)

Preserving Data Query Privacy in Mobile Mashups through Mobile Cloud Computing
Rodney Owens (UNCC, USA); Weichao Wang (University of North Carolina at Charlotte, USA)

Preserving Smartphone Users' Anonymity in Cloudy Days
Claudio A Ardagna (Università degli Studi di Milano, Italy); Mauro Conti (University of Padua, Italy); Mario Leone (University of Padua, Italy); Julinda Stefa (Sapienza University of Rome, Italy)

Privacy Preserving Computations using Implicit Security
Abhishek Parakh (University of Nebraska at Omaha, USA); William Mahoney (University of Nebraska at Omaha, USA)

Secure RFID Authentication Protocol with Key Updating Technique
Gul N. Khan (Ryerson University, Canada); Guangyu Zhu (Ryerson University, USA)

SCAPACH: Scalable Password-Changing Protocol for Smart Grid Device Authentication

Rehana Tabassum (University of Illinois at Urbana-Champaign, USA); Klara Nahrstedt (University of Illinois, USA); Edmond Rogers (IT TECHNICAL ASSOCIATE, USA); King-Shan Lui (The University of Hong Kong, Hong Kong)

WiMAN 3: Optical, Sensor, and Application-Oriented Networks

Room: Arawak A/B
Chair: Qilian Liang (The University of Texas at Arlington)

Hybrid Multicast Traffic Grooming in Transparent Optical Networks with Physical Layer Impairments
Tania Panayiotou (University of Cyprus, Cyprus); Georgios Ellinas (University of Cyprus, Cyprus); Neo Antoniades (College of Staten Island, USA)

The Virtual Sensor System
David Yoon (University of Michigan - Dearborn, USA); Mridula Pandit (University of Michigan - Dearborn, USA); Jie Shen (University of Michigan - Dearborn, USA)

eHealth AON (Application-Oriented Networks)
Wei Liu (Georgia Gwinnett College, USA); EK Park (CSU-Chico, USA)

15:30—17:30

PMECT : Networked System Performance

Room: Independence A
Chair: Sebastian Subik (TU Dortmund University, Germany)

Performance Comparison of ENUM Name Servers
Saulo Henrique da Mata (Federal University of Uberlandia, Brazil); Johann M. H. Magalhaes (Federal Institute of Triangulo Mineiro, Brazil); Alexandre Cardoso (Federal University of Uberlandia, Brazil); Hélio Alexandre Carvalho (CPqD, Brazil); Paulo R. Guardieiro (Federal University of Uberlandia, Brazil)

An Elitist Polynomial Mutation Operator for improved performance of MOEAs in Computer Networks
Kostas Liagkouras (University of Piraeus, Greece); Kostas Metaxiotis (University of Piraeus, Greece)

Upper bounds on Unsuccessful Transmission Rate in Persistent and Non-Persistent CSMA Protocols
Dariusz Koscielnik (AGH University of Science and Technology, Poland); Marek Miskowicz (AGH University of Science and Technology, Poland); Jakub Szyduczynski (AGH University of Science and Technology, Poland)

Causing Remote Hosts to Renege
Nasif Ekiz (F5 Networks, USA); Paul David Amer (University of Delaware, USA)

A Software-Defined Networking approach for Disaster-Resilient WANs
Kien Nguyen (National Institute of Informatics, Japan); Quang Minh Tran (National Institute of Informatics, Japan); Shigeki Yamada (National Institute of Informatics, Japan)

WiMAN 4: Mesh Networks, Wireless LANs, and Clouds

Room: Arawak A/B
Chair: Wei Liu (Georgia Gwinnett College, USA)

Adaptive Wireless Mesh Networks: Surviving Weather Without Sensing It
Nauman Javed (University of Massachusetts, USA); Eric Lyons (University of Massachusetts Amherst, USA); Michael Zink (University of Massachusetts Amherst, USA); Tilman Wolf (University of Massachusetts, USA)

Save For Later: A Technique for Improving End-to-End Mesh Network Performance
Yingxin Jiang (Amazon, USA); Shu Liu (University of Notre Dame, USA); Aaron D Striegel (University of Notre Dame, USA)

Re-thinking 802.11 Rate Selection In The Face of Non-Altruistic Behavior
Andrew Blaich (University of Notre Dame, USA); Shu Liu (University of Notre Dame, USA); Aaron D Striegel (University of Notre Dame, USA)

QoS-Aware Service Selection in Geographically Distributed Clouds
Xin Li (Nanjing University, P.R. China); Jie Wu (Temple University, USA); Sanglu Lu (Nanjing University, P.R. China)

Main Conference

Wednesday, July 31st

8:30—8:50

Opening remarks

8:50—10:15

Keynote I

Title: Placing network coding in the network
Speaker: Muriel Médard, MIT, USA
Chair: George Rouskas, North Carolina State University, USA

Room: Independence B

Abstract: While the flexibility of network coding allows us to consider its introduction in many different ways, a consensus regarding the most beneficial placement in the network, both in terms of layers and of physical location in the network, has not yet emerged. In this talk, we provide some case studies of introduction of network coding at different layers and at different nodes in the network. We consider implementations of network coding at the transport layer and the MAC layer. Using these examples, we distill some possible architectural principles and posit that introduction of coding at several layers simultaneously may provide cumulative gains. We argue that coding at several layers and in several nodes can yield cumulative benefits without the need for explicit cross-layer or inter-node coordination.

Speaker Info: *Muriel Médard* is a Professor in the Electrical Engineering and Computer Science at MIT. She was previously an Assistant Professor in the Electrical and Computer Engineering Department and a member of the Coordinated Science Laboratory at the University of Illinois Urbana-Champaign. From 1995 to 1998, she was a Staff Member at MIT Lincoln Laboratory in the Optical Communications and the Advanced Networking Groups. Professor Médard received B.S. degrees in EECS and in Mathematics in 1989, a B.S. degree in Humanities in 1990, a M.S. degree in EE 1991, and a Sc D. degree in EE in 1995, all from the Massachusetts Institute of Technology (MIT), Cambridge. She has served as an Associate Editor for the Optical Communications and Networking Series of the IEEE Journal on Selected Areas in Communications, as an Associate Editor in Communications for the IEEE Transactions on Information Theory and as an Associate Editor for the OSA Journal of Optical Networking. She has served as a Guest Editor for the IEEE Journal of Lightwave Technology, the Joint special issue of the IEEE Transactions on Information Theory and the IEEE/ACM Transactions on Networking on Networking and Information Theory and the IEEE Transactions on Information Forensic and Security: Special Issue on Statistical Methods for Network Security and Forensics. She serves as an associate editor for the IEEE/OSA Journal of Lightwave Technology. She serves on the board of Governors of the IEEE Information Theory Society as well as serving as the first Vice President in 2011 and the President in 2012. She has served as TPC co-chair of ISIT, WiOpt and CONEXT.

Professor Médard's research interests are in the areas of network coding and reliable communications, particularly for optical and wireless networks. She was awarded the 2009 Communication Society and Information Theory Society Joint Paper Award for the paper: Tracey Ho , Muriel Medard, Rolf Kotter, David Karger, Michelle Effros Jun Shi, Ben Leong, "A Random Linear Network Coding Approach to Multicast", IEEE Transactions on Information Theory, vol. 52, no. 10, pp. 4413-4430, October 2006. She was awarded the 2009 William R. Bennett Prize in the Field of Communications Networking for the paper: Sachin Katti , Hariharan Rahul, Wenjun Hu, Dina Katabi, Muriel Medard, Jon Crowcroft, "XORs in the Air: Practical Wireless Network Coding", IEEE/ACM Transactions on Networking, Volume 16, Issue 3, June 2008, pp. 497 - 510. She was awarded the IEEE Leon K. Kirchmayer Prize Paper Award 2002 for her paper, "The Effect Upon Channel Capacity in Wireless Communications of Perfect and Imperfect Knowledge of the Channel," IEEE Transactions on Information Theory, Volume 46 Issue 3, May 2000, Pages: 935-946. She was co- awarded the Best Paper Award for G. Weichenberg, V. Chan, M. Médard, "Reliable Architectures for Networks Under Stress", Fourth International Workshop on the Design of Reliable Communication Networks (DRCN 2003), October 2003, Banff, Alberta, Canada. She received a NSF Career Award in 2001 and was co-winner 2004 Harold E. Edgerton Faculty Achievement Award, established in 1982 to honor junior faculty members "for distinction in research, teaching and service to the MIT community." In 2007 she was named a Gilbreth Lecturer by the National Academy of Engineering.

10:45—12:15

Invited paper session I

Room: Independence B
Chair: Aaron Striegel (University of Notre Dame, USA)

ROVER: Route Origin Verification Using DNS
Joseph Gersch (Secure64 Software Corporation, USA); Daniel Massey (Colorado State University, USA)

Stochastic Pre-Classification for Software Defined Firewalls
Pritha Ghoshal (Texas A&M University, USA); Christopher Jasson Casey (Texas A&M University, USA); Paul V Gratz (Texas A&M University, USA); Alex Sprintson (Texas A&M University, USA)

Decoupling Policy from Routing with Software Defined Interdomain Management
Peter Thai (Drexel University, USA); Jaudelice C. de Oliveira (Drexel University, USA)

Routing and Network Services (NACSD I)

Room: Independence A
Chair: Ersin Uzun (PARC, USA)

Service Instantiation in an Internet with Choices
Abhishek Dwaraki (University of Massachusetts, USA); Tilman Wolf (University of Massachusetts, USA)

Network Hypervisors: Managing the Emerging SDN Chaos
Shufeng Huang (University of Kentucky, USA); James Griffioen (University of Kentucky, USA)

OpenADN: A Case for Open Application Delivery Networking
Subharthi Paul (Washington University in St. Louis, USA); Raj Jain (Washington University in St. Louis, USA); Jianli Pan (Washington University in Saint Louis, USA); Jayaraman Iyer (Cisco Systems, USA); David R Oran (Cisco Systems, USA)

Intra-Domain Pathlet Routing
Marco Chiesa (Roma Tre University, Italy); Gabriele Lospoto (Roma Tre University, Italy); Massimo Rimondini (Roma Tre University, Italy); Giuseppe Di Battista (Roma Tre University, Italy)

Transport Protocols (NAPE I)

Room: Independence C
Chair: Dan Ionescu (University of Ottawa, Canada)

Transparent Network Protocol Testing and Evaluation
Xiaoshuang Wang (Binghamton University, USA); Sunil Agham (Binghamton University, USA); Vikram P. Munishwar (Binghamton University, USA); Vaibhav Nipunage (Binghamton University, USA); Shailendra Singh (University Of California, Riverside, USA); Kartik Gopalan (Binghamton University, USA)

ST-XCP: A Stable XCP Protocol
Zhiqiang Shi (Institute of Information Engineering, Chinese Academy of Sciences, P.R. China); Dan Ionescu (University of Ottawa, Canada); Dongli Zhang (University of Ottawa, Canada)

A Scheduler for Multipath TCP
Fan Yang (University of Delaware, USA); Paul David Amer (University of Delaware, USA)

Priority-Based Deadline-Aware Datacenter TCP
Zhengwei Zhao (Chinese Academy of Sciences, P.R. China); Jingping Bi (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Zhixiong Jiang (Information Technology Center, China National Petroleum Corporation, P.R. China); Chunyang Lu (Information Technology Center, China National Petroleum Corporation, P.R. China); Yushan Cai (Information Technology Center, China National Petroleum Corporation, P.R. China)

Cloud Technology and Applications (GCC I)

Room: Arawak (A/B)
Chair: Ron Brightwell (Sandia National Labs, USA)

An Approach for Privacy Enhanced Pixel-Level Image Processing in Hybrid Clouds
Arash Nourian (McGill University, Canada); Muthucumaru Maheswaran (McGill University, Canada)

VeloZ: A Charging Policy Specification Language for Infrastructure Clouds

Airton Pereira (Federal University of Pernambuco, Brazil); Paulo Neto (UFPE, Brazil); Vinicius Cardoso Garcia (Federal University of Pernambuco, Brazil); Fernando Trinta (Federal University of Ceara, Brazil); Rodrigo Assad (C.E.S.A.R., Brazil)

Evaluation of Cloud-RAID: A Secure and Reliable Storage Above the Clouds

Maxim Schnjakin (Hasso-Plattner Institute, Germany); Christoph Meinel (Hasso-Plattner Institute, University of Potsdam, Germany)

OCNI – Open Cloud Networking Interface

Houssem Medhioub (Institut Mines-Telecom, France); Bilel Msekni (Institut Mines-Telecom, France); Djamal Zeghlache (Institut Mines-Telecom, France)

13:30—15:00

Panel Discussion I

Topic: Data Center Networks
Moderator: Malathi Veeraraghavan, University of Virginia, USA
Panelists:
      Guohui Wang, IBM Research, USA
      Sudipta Sengupta, Microsoft Research, USA
      Paulie Germano, Google Research, USA
      Krishna Kant, George Mason University and NSF, USA

Room: Independence B

Abstract: This panel will discuss challenges and potential solutions for designing high-speed, reliable data center networks. A single Web search at a data center can involve hundreds of hosts, which makes it important to support fast, reliable, and secure intra-datacenter communications. A high bandwidth network is necessary to support large-scale MapReduce/Hadoop style (offline) data analysis computations. Commercial data center networks typically use Ethernet-switched and/or IP-routed networks, while InfiniBand is popular in scientific data centers for their lower latency. New technologies such as hybrid packet/circuit optical networks, research solutions such as VL2, and other approaches that go beyond 100G are being explored. In parallel, standardization efforts include IETF TRILL and IEEE 802.1Q shortest-path bridging.

Moderator Info: *Malathi Veeraraghavan* is a Professor in the Charles L. Brown Department of Electrical & Computer Engineering at the University of Virginia. Dr. Veeraraghavan received her BTech degree from Indian Institute of Technology (Madras) in 1984, and MS and PhD degrees from Duke University in 1985 and 1988, respectively. After a ten-year career at Bell Laboratories, she served on the faculty at Polytechnic University, Brooklyn, New York from 1999-2002. Her research work on optical networks is supported by NSF and DOE. She holds twenty-nine patents and has received five Best-Paper awards. She served as an Associate Editor for IEEE/ACM Transactions on Networking from 2006-2008, and as Technical Program Chair for IEEE ICC 2002. Her research interests include connection-oriented networking, airborne networks, wireless MAC protocols, bandwidth sharing techniques, internetworking architectures, and Protocols.

Panelist Info:

Guohui Wang is Research Staff Member in IBM T.J. Watson Research Center. His research interests are on networked system design and performance analysis, more specifically on new network architecture, network virtualization and management in cloud data centers. His recent research is focused on hybrid packet/circuit switched data center networking, and software defined networking platform for cloud network services and big data workloads. Guohui received IBM Research Eminence and Excellence Award 2012 for his contributions on software defined cloud network services. Before joining IBM, he graduated from Rice University in 2011 with a Ph.D. degree in computer science.

Sudipta Sengupta is currently at Microsoft Research, where he is working on data center systems and networking for cloud computing, non-volatile memory for cloud/server applications, data deduplication, storage virtualization, and peer-to-peer systems. His work on oblivious routing of network traffic has been awarded the IEEE Communications Society William R. Bennett Prize for 2011 and the IEEE Communications Society Leonard G. Abraham Prize for 2008. At Microsoft, Dr. Sengupta has applied traffic oblivious routing ideas to design a low-cost, flexible, and agile next generation data center network using commodity switches. The ideas in VL2 have been deployed in Bing and Azure properties across Microsoft's cloud data centers. The paper has been recognized by ACM as one of "the most important research results published in CS in recent years" and appeared as an invited paper in the Research Highlights section of the newly re-formatted Communications of the ACM (CACM). Dr. Sengupta is working on non-volatile memory technologies for speeding up cloud/data center/server applications that can exploit the sweet spot between cost and performance. At Microsoft Research, he has built the world's first flash-assisted storage deduplication system, ChunkStash, that uses a specialized chunk hash index on flash to speed up duplicate data detection. He has partnered with the Windows Server team at Microsoft to design and build the new primary data deduplication feature that will ship in Windows Server 2012.

Paul Germano has spent the last 15 years immersed in the telecommunications and data communications industries. His experience spans network operations, engineering and architecture as well as protocol design and testing for ISPs, access and content providers and equipment vendors. During his tenure at Google he has focused on the design and integration of novel network and protocol architectures that massively and cost-effectively scale machine network interconnect within and between data centers.

Krishna Kant is currently a research professor at Center for Secure Information Systems at George Mason University. He is also serving as a program director in the CISE/CNS division of the National Science Foundation (NSF) where he runs the computer systems research (CSR) program and is also intimately involved in driving the NSF wide SEES (science, engineering and education for sustainability) initiative. His current areas of research include sustainability and energy issues in data centers, robustness in the Internet, and cloud computing security. From 1997 until 2008 he was with Intel corporation, working primarily in a variety of server technologies. From 1991 to 1997, he was with Telcordia Technologies (formerly Bellcore) and worked on SS7 signaling and congestion control. Prior to 1991, he was an Associate Professor of Computer Science at Penn State University. He is the author of the graduate textbook Introduction to Computer System Performance Modeling, McGraw Hill 1992. He received his Ph.D. degree in Computer Science from University of Texas at Dallas in 1981.

15:30—17:00

WLAN and Mesh Networks (LAMN I)

Room: Independence B
Chair: Haiying Shen (Clemson University, USA)

Adaptive Backoff Algorithm for IEEE 802.11 DCF under MPR Wireless Channels
Arun I B (Indian Institute of Technology, Madras, India); Venkatesh T. G (Indian Institute of Technology Madras, India)

On the Performance of the IEEE 802.11 in a Multi-channel Environment
Marcos Fagundes Caetano (University of Brasilia, Brazil); Bruno Lourenço (University of Brasilia, Brazil); Jacir Luiz Bordim (University of Brasilia, Brazil)

Access Points Can Tell More for Wiser Selection
Shibo Xu (TsingHua University, P.R. China); Fengyuan Ren (Tsinghua University, P.R. China); Yinsheng Xu (Tsinghua University, P.R. China); Chuang Lin (Tsinghua University, P.R. China); Peng Cheng (Tsinghua University, P.R. China)

Channel Requirements for Interference-free Wireless Mesh Networks to Achieve Maximum Throughput
Aizaz U Chaudhry (Carleton University, Canada); John Chinneck (Carleton University, Canada); Roshdy H Hafez (Carleton University, Canada)

Information-Centric Networks and Security (NACSD II)

Room: Independence A
Chair: Christos Papadopoulos (Colorado State University, USA)

A Verification Service Architecture for the Future Internet
Ahmet C Babaoglu (North Carolina State University, USA); Rudra Dutta (North Carolina State University, USA)

An Empirical Study of Receiver-based AIMD Flow-Control Strategies for CCN
Manolis Sifalakis (University of Basel, Switzerland); Stefan Braun (University of Basel, Switzerland); Massimo Monti (University of Basel, Switzerland); Christian F Tschudin (University of Basel, Switzerland)

DoS & DDoS in Named Data Networking
Paolo Gasti (New York Institute of Technology, USA); Gene Tsudik (University of CA, Irvine, USA); Ersin Uzun (PARC, USA); Lixia Zhang (University of California at Los Angeles, USA)

Secure Name Resolution for Identifier-to-Locator Mappings in the Global Internet
Xiruo Liu (Rutgers University, USA); Wade Trappe (WINLAB, Rutgers University, USA); Yanyong Zhang (Rutgers University, USA)

Packet Scheduling (NAPE II)

Room: Independence C
Chair: Seung-Jong Park (Louisiana State University, USA)

Providing Near-Optimal Fair-Queueing Guarantees at Round-Robin Amortized Cost
Paolo Valente (University of Modena and Reggio Emilia, Italy)

AFCD: An Approximated-Fair and Controlled-Delay Queuing for High Speed Networks
Lin Xue (Louisiana State University, USA); Suman Kumar (Troy University, USA); Cheng Cui (Louisiana State University, USA); Praveenkumar Kondikoppa (Louisiana State University, USA); Chui-hui Chiu (Louisiana State University, USA); Seung-Jong Park (Louisiana State University, USA)

Deriving Pareto-optimal performance bounds for 1 and 2-relay wireless networks
Qi Wang (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Katia Jaffrès-Runser (University of Toulouse, France); Claire Goursaud (INSA-Lyon, France); Jun Li (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Yi Sun (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Jean-Marie Gorce (INSA-Lyon, France)

Modular EGS Architectures for Optical Interconnections
Dario G. Garao (Politecnico di Milano, Italy); Guido Maier (Politecnico di Milano, Italy); Achille Pattavina (Politecnico di Milano, Italy)

High Performance Networks (GCC II)

Room: Arawak (A/B)
Chair: Louise E. Moser (University of California, Santa Barbara, USA)

Location-based Multicast in Wireless Data Center Network

Chunpeng Liao (Tsinghua University, China); Ying Liu (Tsinghua University, China); Yong Cui (Tsinghua University, China); Xin Wang (Stony Brook University, USA)

Seamless Migration of Virtual Machines Across Networks

Umar Kalim (Virginia Tech, USA); Mark K. Gardner (Virginia Tech, USA); Eric Brown (Virginia Tech, USA); Wu-chun Feng (Virginia Tech, USA)

Accelerating Allreduce Operation: A Switch-based Solution

NongDa Hu (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Dawei Wang (Researcher, USA); Zheng Cao (Chinese Academy of Sciences, P.R. China); Xuejun An (Institute of Computing Technology, CAS, P.R. China); Ninghui Sun (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China)

Thursday, August 1st

8:50 –10:15

Keynote II

Title: Locating Mobile Devices Indoors: Opportunities, Theory, and Practice
Speaker: Jack Brassil, Hewlett-Packard Laboratories, USA
Chair: George Rouskas, North Carolina State University, USA

Room: Independence B

Abstract: The Global Positioning System (GPS) revolutionized navigation, and the introduction of GPS receivers in mobile phones pushed that revolution into our hands. But many of us spend up to 90% of our time indoors, often out of reach of satellite and macrocell signals. Despite the great utility and promise of context-aware, site-specific services and decades of research on localization technologies few indoor positioning systems are deployed today, even in heavily populated public spaces. I argue that the confluence of several technologies (e.g., smartphones, sensors, small cells) suggest that indoor positioning system deployments will now accelerate quickly. I will share our observations in developing indoor localization systems using enterprise Radio Access Networks, and discuss the challenges both researchers and practitioners face as conventional enterprise data networks are re-cast to embrace Bring Your Own Devices (BYOD) and the increased presence of mobile network operators.

Speaker Info: *Jack Brassil* received the B.S. degree from the Polytechnic Institute of New York in 1981, the M.Eng. degree from Cornell University in 1982, and the Ph.D. degree from the University of California, San Diego, in 1991, all in electrical engineering. Dr. Brassil has been with Hewlett-Packard Laboratories since 1999. He currently is a Research Scientist and Program Manager in Princeton, NJ. Prior to that he managed a research team in Palo Alto, CA, investigating internet streaming media, content distribution architectures, and communication networks and protocols. He is currently focused on mobile computing systems, and particularly enjoys collaborative teaming with startups,

universities and industrial research partners. Before joining HP he held multiple research positions at Bell Laboratories in Murray Hill and Holmdel, NJ. Dr. Brassil is an IEEE Fellow, a member of the IEEE Communications Society, a member of the ACM, and a member of ACM SIGCOMM.

10:45—12:15

Invited Paper Session -II

Room: Independence B
Chair: Kewei Sha (Oklahoma City University, USA)

Decima: Virtualized I/O Management in 3D Teleimmersive Networks
Raoul Rivas (University of Illinois at Urbana- Champaign, USA); Md A Arefin (University of Illinois at Urbana Champaign, USA); Klara Nahrstedt (University of Illinois at Urbana-Champaign, USA)

Multi path PERT
Ankit Singh (Amazon, USA);Narasimha Reddy (Texas A & M University, USA)

Diverse Infrastructure and Architecture for Datacentre and Cloud Resilience
James P.G. Sterbenz (The University of Kansas and Lancaster University, USA) Prasad Kulkarni (The University of Kansas, USA)

Budget Minimized Resource Allocation and Task Scheduling in Distributed Grid/Clouds
Pan Yi (UNL, USA); Hui Ding (Beijing University of Posts and Telecommunications, USA); Byrav Ramamurthy (University of Nebraska-Lincoln, USA)

Routing and Cross-Layer Design (SEP I)

Room: Independence A
Chair: Donghyun Kim (North Carolina Central University, USA)

Avoiding Heterogeneous Interference through Dynamic Routing in Wireless Sensor Networks
Hou Meng (Tsinghua University, P.R. China); Fengyuan Ren (Tsinghua University, P.R. China)

Spreading the Load in a Tree Type Routing Structure
Declan Delaney (University College Dublin, Ireland); Lina Xu (University College Dublin, Ireland); Gregory O'Hare (University College Dublin, Ireland)

Reliability Analysis of Wireless Real-Time Control Networks
Peter Horvath (Vanderbilt University, USA); Mark Yampolskiy (Vanderbilt University, USA); Yuan Xue (Vanderbilt University, USA); Xenofon Koutsoukos (Vanderbilt University, USA); Janos Sztipanovits (Vanderbilt University, USA)

Controlled Path Traversal for a Mobile Element in Wireless Sensor Networks
Baris Tas (University of Texas at San Antonio, USA); Ali Saman Tosun (University of Texas at San Antonio, USA)

Internet, Network Protocols, and Performance (NAPE III)

Room: Independence C
Chair: Paolo Valente (University of Modena and Reggio Emilia, Italy)

Refining IP-to-AS Mappings for AS-level Traceroute

Baobao Zhang (Tsinghua University, P.R. China); Jun Bi (Tsinghua University, P.R. China); Yangyang Wang (Tsinghua University, P.R. China); Yu Zhang (Harbin Institute of Technology, P.R. China); Jianping Wu (Tsinghua University, P.R. China)

LMB: Towards Sufficient Utilization of Address and Port Resource against IPv4 Exhaustion

Peng Wu (Tsinghua University, P.R. China); Yong Cui (Tsinghua University, P.R. China); Jianping Wu (Tsinghua University, P.R. China); Heyi Tang (Tsinghua University, P.R. China)

Reachability Graph Based Hierarchical Test Generation for Network Protocols Modeled as Parallel Finite State Machines

Jiangyuan Yao (Tsinghua University, P.R. China); Zhiliang Wang (Tsinghua University, P.R. China); Xia Yin (Tsinghua University, P.R. China); Xingang Shi (Tsinghua University, P.R. China); Jianping Wu (Tsinghua University, P.R. China)

An Optimal Algorithm for Time-slot Assignment in SS/TDMA Satellite Systems

Xili Wan (University of Missouri Kansas City, USA); Feng Shan (University of Missouri Kansas City, USA); Xiaojun Shen (University of Missouri-Kansas City, USA)

Cognitive Radio Networks (CCHN I)

Room: Arawak (A/B)
Chair: Xiaojun Cao (Georgia State University, Atlanta, GA, USA)

Channel Detecting Jamming Attacks against Jump-Stay Based Channel Hopping Rendezvous Algorithms for Cognitive Radio Networks

Young-Hyun Oh (North Carolina State University, USA); David Thuente (North Carolina State University, USA)

Distributed Interference Alignment in Cognitive Radio Networks

Yi Xu (Auburn University, USA); Shiwen Mao (Auburn University, USA)

A Reserve Price Auction for Spectrum Sharing with Heterogeneous Channels

Mehrdad Khaledi (Rensselaer Polytechnic Institute, USA); Alhussein A. Abouzeid (Rensselaer Polytechnic Institute, USA)

DORA: Distributed Cognitive Random Access of Unslotted Markovian Channels under Tight Collision Constraints
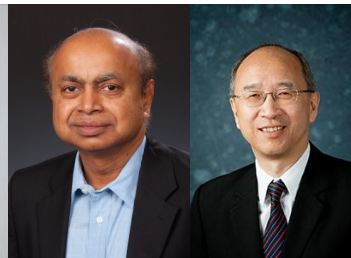
Liqiang Zhang (Indiana University South Bend, USA)

13:30—15:00

Panel Discussion II

Topic: Trends in Network Architecture
Moderator: Tilman Wolf, University of Massachusetts, Amherst, USA
Panelists:
Rudra Dutta, North Carolina State University, USA
Christos Papadopoulos, Colorado State University, USA

Dipankar Raychaudhuri, Rutgers University, USA
Dah Ming Chiu, The Chinese University, Hong Kong

Room: Independence B

Abstract: The architecture of a network defines what types of communication are possible, what security properties can be guaranteed, what performance and robustness can be achieved, etc. As we are struggling more and more with some of the shortcomings of the very successful architecture of the current Internet, proposals for alternate Internet architectures have been developed by the networking research community. This panel features experts from some of the leading research projects on future Internet architecture to discuss trends in network architecture and important aspects of the future Internet, including communication paradigms, security, robustness, economics, evolution strategies, etc. The panel aims to minimize formal presentations and maximize active discussion with the audience.

Moderator Info: *Tilman Wolf* is Professor of Electrical and Computer Engineering at the University of Massachusetts Amherst. He received a Diplom in informatics from the University of Stuttgart, Germany, in 1998. He also received a M.S. in computer science in 1998, a M.S. in computer engineering in 2000, and a D.Sc. in computer science in 2002, all from Washington University in St. Louis. Dr. Wolf is engaged in research and teaching in the areas of computer networks, computer architecture, and embedded systems. His research interests include Internet architecture, network routers, and embedded system security. He is currently lead principal investigator on the ChoiceNet project, one of five large NSF Future Internet Architecture (FIA) projects. He is co-author of the book "Architecture of Network Systems" and has published extensively in peer-reviewed journals and conferences. His research has been supported by grants from NSF, DARPA, and industry. He has taught numerous courses on computer networks, embedded systems, programming, and digital design. Dr. Wolf is a senior member of the IEEE and the ACM.

Panelist Info:

Rudra Dutta was born in Kolkata, India, in 1968. After completing elementary schooling in Kolkata, he received a B.E. in Electrical Engineering from Jadavpur University, Kolkata, India, in 1991, a M.E. in Systems Science and Automation from Indian Institute of Science, Bangalore, India in 1993, and a Ph.D. in Computer Science from North Carolina State University, Raleigh, USA, in 2001. From 1993 to 1997 he worked for IBM as a software developer and programmer in various networking related projects. He has been employed from 2001 - 2007 as Assistant Professor, from 2007 - 2013 as an Associate Professor, and since 2013 as Full Professor in the department of Computer Science at the North Carolina State University, Raleigh. During the summer of 2005, he was a visiting researcher at the IBM WebSphere Technology Institute in RTP, NC, USA. His current research interests focus on design and performance optimization of large networking systems, Internet architecture, wireless networks, and network analytics. His research is supported currently by grants from the National Science Foundation and industry, including a GENI grant and a recent FIA grant from NSF. He has served as a reviewer for many premium journals, on NSF and DoE review panels, as part of the organizing committee of many premium conferences, including Program Co-chair for the Second International Workshop on Traffic Grooming. Most recently, he served as General Chair of IEEE ANTS 2010, and as guest editor of a special issue on Green Networking and Communications of the Elsevier Journal of Optical Switching and Networking. He is currently serving on the Steering Committee of IEEE ANTS 2013, and on the editorial board of the Elsevier Journal of Optical Switching and Networking.

Christos Papadopoulos is currently an associate professor at Colorado State University. He received his Ph.D. in Computer Science in 1999 from Washington University in St. Louis, MO. In 2002, he received an NSF CAREER award to explore router services as a component of the next generation Internet architecture. His current interests include network architectures, security and measurements. Current projects include the DHS-funded PREDICT project, making security data available to researchers and Named Data Networks, an NSF funded project looking at future Internet architectures.

Dipankar Raychaudhuri is Professor-II, Electrical & Computer Engineering and Director, WINLAB (Wireless Information Network Lab) at Rutgers University. As WINLAB's Director, he is responsible for an internationally recognized industry-university research center specializing in wireless technology. His research group at WINLAB has been working on design and implementation of next-generation wireless networks covering a number of emerging usage scenarios such as ad hoc mesh, vehicular, cognitive radio, 4G and mobile Internet. He is the principal investigator for several multi-institutional projects supported by the US National Science Foundation (NSF) including: MobilityFirst future Internet architecture (FIA), "ORBIT" open-access wireless network testbed, and SAVANT inter-network dynamic spectrum collaboration. He also helped initiate the ongoing GENI program for deployment of a global-scale experimental infrastructure for Internet research, and is currently involved with the Open GENI Base Station project aimed at deploying programmable 4G wireless networks at several university campuses across the US. Dr. Raychaudhuri has previously held corporate R&D positions in the telecom/networking industry including: Chief Scientist, Iospan Wireless (2000-01), Assistant General Manager & Dept Head-Systems Architecture, NEC USA C&C Research Laboratories (1993-99) and Head, Broadband Communications Research, Sarnoff Corp (1990-92). He obtained his B.Tech (Hons) from the Indian Institute of Technology, Kharagpur in 1976 and the M.S. and Ph.D degrees from SUNY, Stony Brook in 1978, 79. He is a Fellow of the IEEE.

Dah Ming Chiu is a Full Professor and the Chairman of the Department of Information Engineering, at The Chinese University of Hong Kong. His research interest includes network resource allocation, network economics, network measurement, and big data analytics. A lot of his recent publications concerns Internet content distribution systems, via P2P assisted, or CDN-based systems. He served on the editorial board of IEEE/ACM Transactions on Networking from 2006-20012, and on the TPC of many top conferences for computer networks. He is the co-chair of ACM Sigcomm 2013, which will be hosted at the Chinese University of Hong Kong, in mid August 2013.

15:30—17:00

RFID and Ad Hoc Networks (LAMN II)

Room: Independence B
Chair: Wei Lou (The Hong Kong Polytechnic University, Hong Kong)

Steady Status Study of Distributed Data Caching in Ad Hoc Networks
Julinda Taylor (Wichita State University, USA); Bin Tang (Azusa Pacific University, USA); Mehmet Yildirim (Wichita State University, USA)

Reliable Closed-loop Control in Medical Cyber-Physical Systems over Wireless Ad-hoc Networks
Tao Li (Hong Kong Polytechnic Univ., HongKong); and Jiannong Cao (Hong Kong Polytechnic Univ., HongKong)

A Small Step for Hardware, A Giant Leap for VANET Security
Lingbo Wei (Shanghai Jiaotong University, China); Chi Zhang (University of Science and Technology of China, China); Kefei Chen (Shanghai Jiaotong University, China); Bin Liu (University of Science and Technology of China, China); Jinyuan Sun (University of Tennessee-Knoxville, USA)

A Fast Approach to Unknown Tag Identification in Large Scale RFID Systems
Xiulong Liu (Dalian University of Technology, P.R. China); Keqiu Li (Dalian University of Technology, P.R. China); Yanming Shen (Dalian University of Technology, Dalian, P.R. China); Geyong Min (University of Bradford, United Kingdom); Bin Xiao (The Hong Kong Polytechnic University, Hong Kong); Wenyu Qu (Dalian Maritime University, P.R. China)

Algorithm and Middleware (SEP II)

Room: Independence A
Chair: Peter Horvath (Vanderbilt University, USA)

Target-temporal Effective-sensing Coverage in Mission-driven Camera Sensor Networks
Yi Hong (Renmin University of China, P.R. China); Donghyun Kim (North Carolina Central University, USA); Deying Li (Renmin University of China, P.R. China); Wenping Chen (Renmin University of China, P.R. China); Alade Tokuta (North Carolina Central University, USA); Zhiming Ding (Institute of Software, Chinese Academy of Sciences, P.R. China)

Using Minimum Mobile Chargers to Keep Large-scale Wireless Rechargeable Sensor Networks Running Forever
Haipeng Dai (Nanjing University & State Key Lab of Novel Software Technology, P.R. China); Xiaobing Wu (Nanjing University & State Key Lab of Novel Software Technology, P.R. China); Lijie Xu (Nanjing University, P.R. China); Guihai Chen (Shanghai Jiao Tong University, P.R. China); Shan Lin (Temple University, USA)

A Mediation Layer for connecting Data-Intensive Applications to Reconfigurable Data Nodes
Mohamad Jomaa (American University of Beirut, Lebanon); Khaleel W Mershad (American University of Beirut, Lebanon); Noor Abbani (American University of Beirut, Lebanon); Yaman Sharaf Dabbagh (American University of Beirut, Lebanon); Bashar Romanous (American University of Beirut, Lebanon); Hassan A. Artail (American University of Beirut, Lebanon); Mazen A. R. Saghir

(Texas A&M University at Qatar, Qatar); Hazem Hajj (American University of Beirut, Lebanon); Haitham Akkary (American University of Beirut, Lebanon); Mariette Awad (AUB, Lebanon)

On the Use of Distributed Beamforming to Increase Base Station Anonymity in Wireless Sensor Networks
Jon R. Ward (The Johns Hopkins University, USA); Mohamed Younis (University of Maryland Baltimore County, USA)

P2P and Content Distribution (NAPE IV)

Room: Independence C
Chair: Christopher Casey (Texas A&M University, USA)

A Social Network Integrated Reputation System for Cooperative P2P File Sharing
Kang Chen (Clemson University, USA); Haiying Shen (Clemson University, USA); Karan Sapra (Clemson University, USA); Guoxin Liu (Clemson University, USA)

Modeling Hierarchical Caches in Content-Centric Networks
ZiXiao Jia (Tsinghua University, P.R. China); Peng Zhang (Tsinghua University, P.R. China); Jiwei Huang (Tsinghua University, P.R. China); Chuang Lin (Tsinghua University, P.R. China); John Chi Shing Lui (Chinese University of Hong Kong, Hong Kong)

Probabilistic Analysis of Message Forwarding
Louise E. Moser (University of California, Santa Barbara, USA); Michael Melliar-Smith (University of California, Santa Barbara, USA)

Performance Model for a Cache Enabled Content Distribution Framework over MANET
Yang Guo (Bell Labs, Alcatel-Lucent, USA); Lloyd Greenwald (LGS Innovations LLC, USA); Mary R Schurgot (LGS Innovations LLC, USA); Matteo Varvello (Bell Labs, Alcatel-Lucent, USA)

Resource Allocation (CCHN II)

Room: Arawak (A/B)
Chair: Hui Zang (Sprint, USA)

Resource Allocation in OFDMA Femto Networks
Debalina Ghosh (University of California at Davis, USA); Prasant Mohapatra (University of California, Davis, USA)

Energy-Efficient QoS Provisioning in Random Access Satellite NDMA Schemes
José Vieira (Universidade Nova de Lisboa, Portugal); Francisco Ganhão (Universidade Nova de Lisboa, Portugal); Luis Bernardo (Universidade Nova de Lisboa, Portugal); Rui Dinis (Instituto de Telecomunicacoes, Portugal); Marko Beko (ULHT/UNINOVA, Portugal); Rodolfo Oliveira (Universidade Nova de Lisboa/Uninova, Portugal); Paulo F Pinto (Universidade Nova de Lisboa, Portugal)

Reciprocity and Fairness in Medium Access Control Games
Mahdi Azarafrooz (Stevens Institute Of Technology, USA); Rajarathnam Chandramouli (Stevens Institute of Technology, USA); Koduvayur P Subbalakshmi (Stevens Institute of Technology, USA)

17:15—18:45

DTN and Miscellaneous Topics (LAMN III)

Room: Independence B
Chair: Chi Zhang (University of Science and Technology of China, China)

Energy-efficient Contact Probing in Opportunistic Mobile Networks
Huan Zhou (Zhejiang University, P.R. China); Huanyang Zheng (Temple University, USA); Jie Wu (Temple University, USA); Jiming Chen (Zhejiang University, P.R. China)

Making Nodes Cooperative: A Secure Incentive Mechanism for Message Forwarding in DTNs
Honglong Chen (China University of Petroleum, P.R. China); Wei Lou (The Hong Kong Polytechnic University, Hong Kong)

Social-aware Relay Node Selection in Delay Tolerant Networks
Kaimin Wei (Beihang University, China); Deze Zeng (The University of Aizu, Japan); Song Guo (The University of Aizu, Japan); and Ke Xu (Beihang University, China)

Network coding for multicasting over Rayleigh fading multi access channels
Avi Zanko (Bar-Ilan University, Israel); Amir Leshem (Bar-Ilan University, Israel); Ephraim Zehavi (Bar-Ilan University, Israel)

RFID, M2M Communications, and Social Sensing (SEP III+MCCN)

Room: Independence A
Chair: Liqiang Zhang (Indiana University South Bend, USA)

Efficient Protocols for Rule Checking in RFID Systems
Yafeng Yin (Nanjing University, P.R. China); Lei Xie (Nanjing University, P.R. China); Sanglu Lu (Nanjing University, P.R. China); Daoxu Chen (Nanjing University, P.R. China)

Machine-to-Machine Communication over TV White Spaces for Smart Metering Applications
Luca Bedogni (University of Bologna & Department of Computer Science, Italy); Angelo Trotta (University of Bologna, Italy); Marco Di Felice (University of Bologna, Italy); Luciano Bononi (University of Bologna, Italy)

MINERVA: Information-Centric Programming for Social Sensing
Shiguang Wang (University of Illinois at Urbana Champaign, USA); Shaohan Hu (University of Illinois at Urbana-Champaign, USA); Shen Li (University of Illinois at Urbana-Champaign, USA); Hengchang Liu (UIUC, USA); Md Yusuf Sarwar Uddin (University of Illinois at Urbana-Champaign, USA); Tarek Abdelzaher (University of Illinois, Urbana Champaign, USA)

Load Balancing by Ruleset Partition for Parallel IDS on Multi-Core Processors
Haiyang Jiang (Insititute of Computing Technology, CAS, P.R. China); Gaogang Xie (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Kavé Salamatian (LISTIC PolyTech, Université de Savoie Chambery Annecy, France)

Multimedia and Networking (MRTM I+MCCN)

Room: Independence C
Chair: Yang Guo (Bell Labs, USA)

Measuring the Relationships between Internet Geography and RTT
Raul Landa (University College London), Richard G Clegg (University College London), João Taveira Araújo (University College London), Eleni Mykoniati (University College London), David Griffin (University College London), Miguel Rio (University College London)

Fast Queuing Policies for Multimedia Applications
Duong Nguyen-Huu (Oregon State University) Thai Duong (Oregon State University), Thinh Nguyen (Oregon State University)

Supporting Voice over LTE: Solutions, Architectures, and Protocols
Christopher Jasson Casey (Texas A&M University, USA); Srivatsan Rajagopalan (Qualcomm Inc., USA); Muxi Yan (Texas A&M University, USA); Graham Booker (Texas A&M University, USA); Alex Sprintson (Texas A&M University, USA); Walt Magnussen (Texas A&M University, USA)

Generic Real-Time Traffic Distribution Framework: Black Rider

Sandra Frei (University of Plymouth, United Kingdom); Woldemar Fuhrmann (University of Applied Sciences Darmstadt, Germany); Bogdan Ghita (University of Plymouth, United Kingdom)

Physical Layer, Cellular Networks and Cognitive Radios (CCHN III)

Room: Arawak (A/B)
Chair: Shiwen Mao (Auburn University, Auburn, AL, USA)

Analyzing and Modeling Temporal Patterns of Human Contacts in Cellular Networks

Hayang Kim (Georgia Institute of Technology, USA); Hui Zang (Sprint, USA); Xiaoli Ma (Georgia Institute of Technology, USA)

A Study of SNR Wall Phenomenon under Cooperative Energy Spectrum Sensing

Zejiao Li (University of Electronic and Science Technology of China, P.R. China); Xin Su (Tsinghua University, P.R. China); Jie Zeng (Tsinghua University, P.R. China); Yujun Kuang (University of Electronic Science and Technology of China, P.R. China); Haijun Wang (Tsinghua University, P.R. China)

CogWnet: A Resource Management Architecture for Cognitive Wireless Networks

Ismail AlQerm (KAUST, Saudi Arabia); Basem Shihada (KAUST, Saudi Arabia); Kang G. Shin (University of Michigan, USA)

Friday, August 2nd

8:30–10:15

Keynote III

Title: Next Steps towards Internet-optical Service Convergence: A Network Management Perspective
Speaker: Admela Jukan, Technische Universität Carolo-Wilhelmina zu Braunschweig (Brunswick), Germany
Chair: Christian Poellabauer, University of Notre Dame, USA

Room: Independence B

Abstract: Despite the steady and significant increase in Internet traffic, today's Internet topologies are stable, reliable, and - underutilized. This is mainly due to the proven practice to overprovision Internet links, - often up to seventy percent, thus allowing for accommodation of unpredictably large packet flows, while keeping the network stable and resilient against attacks and failures. Even with major operational benefits, the practice of overprovision is known for its high capital and operational expenses. At first glance, dynamic optical circuits can address the downsides of

overprovision, as they can be setup to bypass any congested or faulty IP links and they are comparably less expensive. However, the two networks -optical and Internet, have evolved as two fundamentally different and separately managed ecosystems, and cannot easily operate in harmony. In this talk, I will discuss why past approaches to deploy dynamic optical circuits have not been widely adopted for IP routing, - from the point of view of network management, and present our research ideas on how Internet can effectively use optical circuits. I will talk about the importance of new systems research and present new directions in theoretical studies in this field, including an analysis of the effects of dynamic optical circuit setup on IP routing. Finally, I will give a practical outlook from our EU Project ONE (www.ict-one.eu), focusing on network management aspects of optical networks and the Internet coordination.

Speaker Info: Admela Jukan is Chair Professor of Communication Networks at the Technische Universität Carolo-Wilhelmina zu Braunschweig (Brunswick) in Germany. Prior to that post, she was research and visiting faculty at the Institut National de la Recherche Scientifique (INRS), University of Illinois at Urbana Champaign (UIUC) and Georgia Tech (GaTech). In 1999 and 2000, she was a visiting scientist at Bell Labs, Holmdel, NJ. From 2002-2004, she served as Program Director in Computer and Networks System Research at the National Science Foundation (NSF) in Arlington, VA. Dr. Jukan has chaired and co-chaired several international conferences, including IFIP ONDM, IEEE ANTS, IEEE ICC and IEEE GLOBECOM. She serves as Associate Technical Editor for IEEE Communications Magazine and IEEE Network. She is a co-Editor in Chief of the Elsevier Journal on Optical Switching and Networking (OSN). She is an elected Vice Chair of the IEEE Optical Network Technical Committee, ONTC (Chair in 2014). She is recipient of an Award of Excellence for the BMBF/CELTIC project 100Gb Ethernet and was also awarded the IBM Innovation Award (2009). She is the Coordinating Principal Investigator of the FP7 EU-Project ONE (ict-one.eu), with focus on next-generation network management systems in combined IP and optical networks. Admela Jukan received her Dr.tech. degree (cum laude) in Electrical and Computer Engineering from the Technische Universität Wien, the M.Sc. degree in Information Technologies from the Politecnico di Milano, Italy, and her Dipl. -Ing. degree from the Fakultet Elektrotehnike i Racunarstva (FER), in Zagreb, Croatia. Admela enjoys playing tennis and dog walking, and her work as a teacher has been greatly focused on helping female students and scholars from all over the world advance their career in science and technology.

10:45—12:15

Invited Paper Session -III

Room: Independence B
Chair: Alhussein A. Abouzeid (Rensselaer Polytechnic Institute, USA)

Network Characterization and Perceptual Evaluation of Skype Mobile Videos
Shraboni Jana(University of California, Davis, USA); Amit Pande (University of California Davis, CA, USA); An Chan (Broadcom Corporation, USA);Prasant Mohapatra(University of California, Davis, USA)

Resource Allocation for Energy Efficient k-out-of-n System in Mobile Ad Hoc Networks
Chien-An Chen (Texas A&M University, USA); Myounggyu Won (Texas A&M University, USA); Radu Stoleru (Texas A&M University, USA); Geoffrey G Xie(Naval Postgraduate School, USA)

Throughput Enhancement for WDS-based WLANs
Jae-Pil Jeong (Pohang University of Science and Technology (POSTECH), Korea);Wan-Seon Lim (Pohang University of Science and Technology (POSTECH), Korea);Young-Joo Suh (Pohang University of Science and Technology (POSTECH), Korea)

Security, Privacy, and Trust I (SPT I)

Room: Independence A
Chair: Victor CM Leung (The University of British Columbia, Canada)

Secure Verification of Location Claims on a Vehicular Safety Application

Wafa Ben Jaballah (University of Bordeaux 1, France); Mauro Conti (University of Padua, Italy); Mosbah Mohamed (University of Bordeaux 1 (Labri), France); Claudio E. Palazzi (University of Padua, Italy)

MOTAG: Moving Target Defense Against Internet Denial of Service Attacks
Quan Jia (George Mason University, USA); Kun Sun (George Mason University, USA); Angelos Stavrou (George Mason University, USA)

Towards A Cooperative Mechanism Based Distributed Source Address Filtering
Jie Li (Tsinghua University, P.R. China); Jun Bi (Tsinghua University, P.R. China); Jianping Wu (Tsinghua University, P.R. China)

Integration of Quantitative Methods for Risk Evaluation within Usage Control Policies
Leanid Krautsevich (IIT-CNR, Italy); Aliaksandr Lazouski (IIT-CNR, Italy); Fabio Martinelli (CNR-IIT, Italy); Paolo Mori (IIT, CNR, Italy); Artsiom Yautsiukhin (IIT-CNR, Italy)

Streaming and Content Distribution Networking (SCDN I)

Room: Independence C
Chair: Hang Liu (The Catholic University of America, USA)

Fast Near-Optimal Algorithm for Delivering Multiple Live Video Channels in CDNs
Jiayi Liu (Telecom Bretagne, France); Gwendal Simon (Telecom Bretagne, France)

Video Browsing - A Study of User Behavior in Online VoD Services
Liang Chen (The Chinese University of Hong Kong); YiPeng Zhou (The Chinese University of Hong Kong); Dah Ming Chiu (The Chinese University of Hong Kong)

EMC: The Effective Multi-path Caching Scheme for Named Data Networking
Hao Wu (Tsinghua University, China); Jun Li (Tsinghua University, China); Yi Wang (Tsinghua University, China); Bin Liu (Tsinghua University, China)

Routing and Name Resolution in Information-Centric Networks
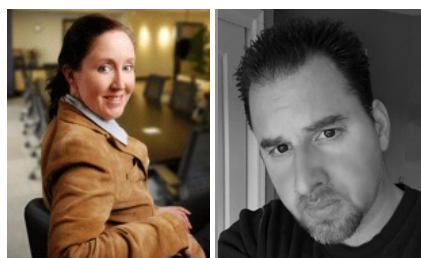Hang Liu (The Catholic University of America, USA); Dan Zhang (WINLAB, Rutgers University, USA)

13:30—15:00

Panel Discussion III

Nick Bastin: photo not available

Topic: SDN and Network Virtualization
Moderator: Ilya Baldin, RENCI, USA
Panelists:
  Kristin Raushenbach, BBN-Raytheon, USA
  Gary Berger, Cisco, USA
Nick Bastin, Consultant, USA

Room: Independence B

Abstract: Network virtualization is a powerful concept that through a variety of mechanisms allows for the creation of isolated partitions from common network substrate, such that each virtual network residing in a partition presents itself as an independently managed entity. SDN or Software Defined Networks present a separation between networking hardware and software, making a number of network functions, previously built into the network, explicitly programmable by an operator. This separation allows to view SDN as network virtualization mechanism. This panel will discuss the intersection of these two concepts and the mutual relationship between them from the perspective of SDN controllers, equipment vendors and transport networks.

Moderator Info: *Ilya Baldin* leads RENCI's network research and infrastructure programs. He is a networking researcher with a wide range of interests, including high-speed optical network architectures, cross-layer interactions, novel signaling schemes and network security. Before coming to RENCI, Baldine was the principal scientist at the Center for Advanced Network Research at the Research Triangle Institute, and a network research engineer at the Advanced Network Research group at MCNC, where was a team member and a leader of a number of federally funded research efforts. He holds Ph.D. and MS degrees in computer science from North Carolina State University.

Panelist Info:

Kristin Rauschenbach's technical expertise is in the area of optical networking including wideband optical network systems and components as well as network management, control, and security. She has worked in both the government and commercial sectors in the area of data communications and telecommunications fiber optic networks. One of her current research interests is in control plane technology for optical transport SDN.

Gary Berger: Technology strategist with 23 years experience in systems and application development currently working in Cisco's Chief Strategy Office where he focuses on distributed computing and SDN. Gary has spent a majority of his career consulting for Fortune 500 companies as well as running architecture teams at several Wall Street companies including Dow Jones & Company. Prior to joining the Chief Strategy Office he worked as a Customer Solutions Architect and as a Technical Leader for Data Center Technology Group CTO's office.

Nick Bastin is a freelance consultant working with researchers, enterprises, and hardware vendors. He has previously worked on the staff at Big Switch Networks, was the OpenFlow Engineering Manager for the Clean Slate program at Stanford University, and is an active member of the NSF GENI community. Prior to joining Stanford he spent 12 years at OPNET Technologies, working to bring modeling and network analytics to the fore as primary tools in enterprise and service provider network operations and planning, building on his experience as both a software developer and service provider operations staff.

15:30—17:00

Scalable, Reliable, and Energy-Efficient Networks (SREN I)

Room: Independence B
Chair: Luiz F. Bittencourt (University of Campinas, Brazil)

A Virtual Network Allocation Algorithm for Reliability Negotiation
Rafael Gomes (State University of Campinas, Brazil); Luiz F. Bittencourt (University of Campinas, Brazil); Edmundo Madeira (State University of Campinas, Brazil)

A Novel Architecture for the Distribution Section of Smart Grid with Renewable Sources and Power Storage
Qi Wang (University of Trento, Italy); Raul Palacios (University of Trento, Italy); Fabrizio Granelli (University of Trento, Italy)

Profiling and Improving I/O Performance of a Large-Scale Climate Scientific Application
Zhuo Liu (Auburn University, USA); Bin Wang (Auburn University, USA); Teng Wang (Auburn University, USA); Yuan Tian (University of Tennessee, USA); Cong Xu (Auburn University, USA); Yandong Wang (Auburn University, USA); Weikuan Yu (Auburn University, USA)

Improving the Network Energy Efficiency in MapReduce Systems

Lin Wang (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Fa Zhang (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Zhiyong Liu (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China)

Security, Privacy, and Trust II (SPT II)

Room: Independence A
Chair: Jun Bi (Tsinghua University, P.R. China)

On Scaling Perturbation Based Privacy-preserving Schemes in Smart Metering Systems

Xuebin Ren (Xi'an Jiaotong University, P.R. China); Wei Yu (Towson University, USA); Xinyu Yang (Xi'an Jiaotong University, P.R. China); Jie Lin (Xi'an Jiaotong University, P.R. China); Qingyu Yang (Xi'an Jiaotong University, P.R. China)

Achieving Privacy of Data Requests in MANETs by means of Piggybacking and Hop Modification

Noor Abbani (American University of Beirut, Lebanon); Hassan A. Artail (American University of Beirut, Lebanon)

Network Coding Based Encryption System for Advanced Metering Infrastructure

Hasen Nicanfar (The University of British Columbia, Canada); Amr Alasaad (University of British Columbia, Canada); Peyman TalebiFard (The University of British Columbia, Canada); Victor CM Leung (The University of British Columbia, Canada)

A New Efficient Secure Coding Scheme for Random Linear Network Coding

Hassan Noura (Université Paris-Sud 11, France); Khaldoun Al Agha (LRI, France); Steven Martin (University of Paris-Sud 11, France)

NACSD Tutorial

Title: GENI: An Infrastructure for Networking Research and Education - A Talk and Demonstration
Speaker: Vicraj (Vic) Thomas, Raytheon BBN Technologies, USA

Room: Independence C

Abstract: GENI--the Global Environment for Network Innovations--is an infrastructure for experimentation with networking and distributed systems. GENI is well suited for exploring networks at scale, thereby promoting innovations in network science, security, services and applications. GENI is currently being used by over seven hundred experimenters for research and education. The GENI project is sponsored by the US National Science Foundation and there is no charge for using GENI for research and instruction. For more information on GENI, visit http://www.geni.net or email help@geni.net.
This talk will present an overview of GENI and how it is being built and used. It will also include a demonstration of the setting up and running of a simple experiment using GENI.

Speaker Info: Dr. Vicraj (Vic) Thomas is a Scientific Director at BBN Technologies and an "Experimenter Advocate" with the GENI Project Office (GPO). His research interests lie in the areas of distributed and fault-tolerant systems. On the GENI project he is responsible for ensuring experimenter needs for tools, documentation and training are being met. Prior to BBN, Vic was a Staff Scientist at Honeywell. He was the Industrial Technology Area Leader for the sensor networks research area within the US-UK International Technology Alliance (ITA) program on Network Science; the PI for Honeywell's DARPA NEST and Ultra*Log projects; a systems architect on the NASA C3I network for the Orion program and a member of the architecture team for the Boeing Future Combat Systems SOSCOE system (middleware for the FCS system of systems). Vic has been invited to speak at workshops and conferences including the NSF/Japan

Society for the Promotion of Science Workshop on Sensors, Smart Structures and Mechatronic Systems (Tokyo 2005), the EU Workshop on Next Generation Sensor Actuator Systems (Edinburgh 2007), the International Workshop on Cyber-Physical Systems Challenges and Applications (Santorini 2008), the International Symposium on Global Information Governance (Prague 2009) and Workshop on the Governance of Technology, Information, and Policies (Orlando 2011).

17:00—17:15

Concluding Remarks

Room: Independence B

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