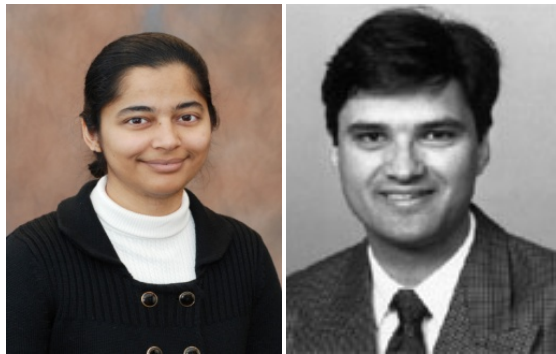


Message from the ICNP 2014 General Chairs



Welcome to the 22nd International Conference on Network Protocols (ICNP). We are pleased to have you join us in the research triangle area formed by the three academic institutions of North Carolina State University, Duke University, and the University of North Carolina at Chapel Hill. The triangle has also been a major technological hub for the computing industry, including IBM, Cisco, Nortel, Redhat, and now, Google. We are looking forward to an inspiring four days of workshops, paper presentations, discussions and social networking among researchers from all over the world with an interest in modern computer networking protocols.

The conference starts with a day of workshops, which includes: the Workshop on Control, Operation, and application in SDN Protocols (CoolSDN), the IEEE Workshop on Cognitive Radio Architectures for Broadband (CRAB), and the Workshop on Secure Network Protocols (NPsec). Additionally, the last day of the conference will feature the Workshop on Computer and Networking Experimental Research using Testbeds (CNERT). We thank the ICNP workshop chairs Haiying Shen and Jonathan Sobel for organizing an excellent set of workshops and the chairs of the workshops Bing Wang, Kaiqi Xiong, Mark Berman, Thanasis Korakis (CNERT), Y. Richard Yang, Jun Bi, Guofei Gu (CoolSDN), Xiuzhen Cheng, Tommaso Melodia, Yalin E. Sagduyu, Yi Shi, Alexander M. Wyglinski (CRAB), and Jun Li, Wei Zhao (NPsec) for putting together great workshop programs. The last day of the conference will also feature the PhD forum thanks to the organizers Jay Aikat and Lina Battestilli.

The main conference runs from Wednesday to Friday. We would like to thank the program committee chairs Mohamed Gouda and Alex Liu for putting together an excellent program for ICNP'14. The conference will have two keynotes shedding lights on latest developments in related fields, which will be delivered by Mike Reiter and John C.S. Lui.

ICNP 2014 would not have been possible without the guidance of steering committee chaired by Ken Calvert and the support of many volunteers. We would like to thank Melissa Wood for serving as our treasurer. We are grateful to James Martin and Wenye Wang for publicizing this event and to Lan Wang for efficiently handling publication of the ICNP 2014 proceedings. Thanks also go to Chen Qian and Chuan Yue for serving as student travel grant chairs.

We would like to acknowledge the sponsorship of IEEE Computer Society and the technical co- sponsorship of the University of North Carolina at Chapel Hill and North Carolina State University. We would also like to thank Cisco Systems, and HP Labs for their generous support of ICNP'14, as well as the National Science Foundation for funding student travel grants.

Finally, we thank all of you for attending ICNP 2014. We sincerely hope you enjoy the conference!

Jasleen Kaur
University of North Carolina at Chapel Hill

George Rouskas
North Carolina State University

Message from the ICNP 2014 Technical Program Chairs



Welcome to IEEE ICNP 2014, the 22nd International Conference on Network Protocols in Raleigh, North Carolina! As a premier conference on computer networks, the technical program this year features 32 outstanding regular papers and 15 concise papers that cover a wide variety of areas including Cloud computing & Data Center Networking, Cyber-Physical Systems, Internet Monitoring and Measurement, Routing, Security and Pricing, Network Algorithms, Forwarding Plane, Wireless Networks, and Transport. We are delighted to have two keynote speakers this year: Mike Reiter, (ACM Fellow, IEEE Fellow, Lawrence M. Slifkin Distinguished Professor of the Department of Computer Science of University of North Carolina at Chapel Hill), and John C.S. Lui (ACM Fellow, IEEE Fellow, Choh-Ming Li Professor of Computer Science and Engineering of the Chinese University of Hong Kong).

This year, we made the following four major changes to ICNP with approval from the Steering Committee. First, we broadly defined the term "protocol" to include all networking topics that directly or indirectly impact network protocols. Second, we solicited two types of papers: regular papers of at most 12 pages each, and concise papers of at most 6 pages each. A regular paper describes an important research project that has been completed, whereas a concise paper describes a significant contribution in a research project that may still be in progress. Regular papers and concise papers have different submission and notification deadlines. The two types of papers are reviewed by different sets of TPC members, but overseen by the same set of Area Chairs. Third, we increased the page limit from 10 to 12 to be relatively consistent with other premier conferences in computer networks. Fourth, we established the collaboration with IEEE/ACM Transactions on Networking so that starting from this year, up to two of the best papers from ICNP each year will be fast-tracked in the IEEE/ACM Transactions on Networking, with a streamlined journal review process.

This year, we received many submissions of high quality; however, due to the limited space, the Technical Program Committee has to make difficult choices. For the regular track, we received 160 submissions (from 22 countries), out of which 32 papers were accepted for publication in the conference proceedings. For the concise track, we received 79 submissions (from 20 countries), out of which 15 papers were accepted for oral presentation in the conference.

Following ICNP's tradition of rigorous and double-blind reviewing, both the regular and concise track follows the following three-stage reviewing process. In the first stage, we assign each paper to several TPC members and an Area Chair for reviewing. For regular papers, more than 90% received 5 or more reviews and more than 70% received 6 or more reviews. Specifically, the percentages of regular papers received 4, 5, 6, 7, and 8 reviews, including the Area Chair review, are 5.66%, 20.01%, 40.25%, 30.82%, and 1.26%, respectively. For concise papers, more than 87% received 4 or more reviews and more than 48% received 5 reviews. Specifically, the percentages of concise papers received 3, 4, 5 reviews, including the Area Chair review, are 12.66%, 39.24%, 48.1%, respectively. In the second stage, for each paper, the reviewers and the Area Chair discussed the paper online trying to reach a consensus, and then the Area Chair wrote a summary of the reviews and gave an editorial recommendation (directly accept, discuss in the TPC meeting, or directly reject). Based on the TPC and Area Chair reviews and recommendations, we selected 15 regular and 8 concise papers to be directly accepted into the program without discussion in the TPC meetings, and 34 regular and 14 concise papers to be discussed in the TPC meetings. In the third stage, the regular track TPC held a meeting and selected 17 regular papers to be included in the program, and the concise track TPC held a meeting and selected 7 concise papers to be included in the program.

The program of ICNP this year would not have been possible without the dedicated effort of a number of people. First, we would like to thank the 86 regular track TPC members and the 31 concise track TPC members for their hard work on providing high quality reviews. Second, we would like to thank the 20 Area Chairs for providing both high quality reviews and editorial summaries. We especially thank those TPC members and Area Chairs who attended the TPC meetings for their valuable time and passionate debates. Attending such long meetings requires a significant amount of effort. Third, we thank Jonathan Sobel, Carl Bruggeman, and Andy Keep from Cisco for providing and managing the bridges for the whole duration of two long TPC meetings. Fourth, we thank this year's ICNP General Chairs, Professor Jasleen Kaur (University of North Carolina at Chapel Hill, USA) and Professor George Rouskas (North Carolina State University, USA) and the entire ICNP 2014 organizing committee for their generous support. We are grateful to the ICNP Steering Committee for the opportunity to serve as TPC Chairs and their continuous guidance along the way. Finally, we thank all authors for choosing ICNP 2014 as a venue for presenting their work, and all attendees for making ICNP 2014 a premier and exciting forum for exchanging ideas and promoting future research on computing networks.

Alex X. Liu
Michigan State University, USA

Mohamed Gouda
The University of Texas at Austin, USA

Welcome Message from the ICNP 2014 PhD Forum

Technical Program Committee Co-Chairs

Welcome to the ICNP PhD Forum 2014!

The PhD Forum has been a regular event of the IEEE ICNP conference for the past few years. This forum is intended for both doctoral students who are starting their PhD, and those who are towards the end of their dissertation to discuss their work.

NEW this year: Each student, whose paper is accepted to the PhD Forum, will be presenting their work in a short talk at the PhD Forum as well as in a poster at the main ICNP Conference. This will enable the PhD student authors to discuss their work and interact with all of the ICNP conference attendees as well as the PhD Forum attendees.

After a careful review process, we accepted 11 papers for presentation at the Forum. We thank all the authors for their participation in the PhD Forum and presenting their posters at the main ICNP poster session. We are deeply grateful to the technical program committee members for their time and effort in reviewing the submissions and giving invaluable feedback to the authors.

We express our sincere gratitude to the keynote speaker, Prof. Theo Benson, and to the panel participants, Prof. Ken Calvert, Prof. Xiaoming Fu, Dr. Steven Hunter, and Prof. Kevin Jeffay for taking the time and effort to share their wisdom with the PhD Forum authors and participants.

We sincerely hope that you will find this Forum to be an enriching experience. We wish you all the best in your promising careers ahead.

Sincerely yours,

Jay Aikat, *University of North Carolina at Chapel Hill, USA*
Lina Battestilli, *North Carolina State University, USA*

**Welcome Message from the Computer and Networking
Experimental Research Using Testbeds Workshop Technical
Program Committee Co-Chairs
— CNERT 2014 —**

Welcome to CNERT 2014!

Experimentation has played a very important role in advancing computing research. Although simulation is an important tool for studying and analyzing the behavior of new protocols and algorithms, it is often essential to validate new research ideas on real systems and testbeds.

CNERT 2014 is an evolution of the GREE Workshops that were held successfully three times in 2012, 2013 and 2014. It expands the scope of GREE Workshops by including a broad range of experimental research in the areas of computer networking, distributed systems and cloud computing that may involve research testbeds such as GENI, PlanetLab, Emulab, Orbit, Ofelia, and many more. The goal of CNERT 2014 is to inspire researchers to use testbeds in novel and interesting ways as a means to validate research ideas.

Through a rigorous review process, we accepted 9 papers for presentation during the workshop. These include five long papers, one short paper and three work-in-progress papers. A significant feature of the technical program is that all the papers will provide demos (most of them are even live demos), reflecting the theme of this workshop. We thank all the authors for their great contributions to the workshop and their careful consideration of review comments in their final versions. We are also deeply grateful to the workshop technical program committee for their valuable time and great efforts in providing thorough and constructive feedback to the authors.

Furthermore, we are grateful to many of our colleagues for their efforts and contributions to this workshop. Without their help, this workshop would not have been possible. We are also thankful to the generous financial support from NSF, BBN/GPO, and Omnibond.

We truly hope that you will find this workshop to be interesting, enriching, and informative. In closing, we look forward to seeing all of you in the future CNERT workshops.

Sincerely yours,

Mark Berman, *BBN Technologies, USA*
Thanasis Korakis, *NYU Polytechnic School of Engineering, USA*
Bing Wang, *University of Connecticut, USA*
Kaiqi Xiong, *Rochester Institute of Technology, USA*

Welcome Message from the COnTrol, OPeration, and AppLication in SDN Protocols Workshop Co-Chairs

— CoolSDN 2014 —

Welcome to CoolSDN 2014!

A major recent development in computer networking is the emergence of Software Defined Networking (SDN), whose goal is to provide a centralized, programmable control plane that is decoupled from the distributed data planes on individual network devices. In particular, the development of OpenFlow has demonstrated many potential benefits of SDN, and multiple vendors have started to offer commercial switches supporting the OpenFlow standard. Researchers have also made progress on SDN components including SDN controllers, switches, programming interfaces, verification and debugger tools, and SDN applications in data center network, campus network, routing, and traffic engineering.

Despite the progress, many important questions regarding SDN still remain, especially in longer term issues around SDN theoretical foundation, programmability and control logic, formal methods and protocol engineering, abstraction and view, network operating system, etc. The goal of CoolSDN 2014 workshop is to facilitate research and discussion related to those longer term SDN topics.

The first CoolSDN workshop accepted 7 full papers for presentation during the workshop. We invited Steve Garrison, the Vice President of Pica8, to offer the workshop a keynote speech. This workshop also brings researchers and engineers together to a panel with the topic: “SDN Research: Academic and Industry Perspectives”, which is moderated by Andi Voellmy from Cisco Systems.

We are deeply thankful to the keynote speaker, the panel moderator and panelists, and all the authors for their great contribution to the workshop. We also greatly appreciate the efforts of the workshop technical program committee members in providing constructive feedback to the authors.

Sincerely yours,

Y. Richard Yang, *Yale Univ., USA*
Jun Bi, *Tsinghua Univ., China*
Guofei Gu, *Texas A&M Univ., USA*

**Welcome Message from the Cognitive Radio Architectures
for Broadband Workshop Co-Chairs
— CRAB 2014 —**

Welcome to CRAB 2014!

Cognitive radio enables access to broader pools of spectrum and more efficient utilization of current wireless resources and thus plays a key role for the next generation of mobile broadband. Recently, there are more efforts on design and implementation of cognitive radio architecture for broadband applications. This workshop focuses on cognitive radio protocol design, analysis, implementation, test, and evaluation to address the future of mobile broadband. CRAB'14 gives researchers and practitioners a unique opportunity to share their ideas, theoretical analysis, and practical implementation on many emerging broadband applications, including application of cognitive radio to current 4G LTE environments, and how it could be used to enable 5G or later generations of mobile broadband services.

We welcome attendees to attend the keynote on protocol design and prototyping for QoS and reliability. This valuable and insightful talk will guide us to a better understanding on recent advances and future research directions in cognitive radio networks.

Through a rigorous review process, we accepted 5 presentations during the workshop. These presentations cover a variety of topics, including communication architecture design, information freshness, quality of service, protocol design, performance evaluation, and testbed design. We thank all the authors and speakers for their great contributions to the workshop. We are also deeply grateful to the workshop technical program committee for their valuable time and great efforts in reviewing papers and providing feedback for authors.

We hope that you will find this workshop to be interesting and insightful, and that this workshop will provide you a valuable opportunity to share ideas with other researchers and practitioners around the world.

Sincerely yours,

Xiuzhen (Susan) Cheng, *George Washington University*
Tommaso Melodia, *University at Buffalo, The State University of New York*
Yalin E. Sagduyu, *Intelligent Automation Inc.*
Yi Shi, *Intelligent Automation Inc.*
Alexander M. Wyglinski, *Worcester Polytechnic Institute*

Welcome Message from the 9th Workshop on Secure Network Protocols Co-Chairs

— NPSec 2014 —

While networking protocols are fundamental to the operations of networks, the security of the networking protocols has been found lacking. Virtually all network protocols, old or new, can be subject to certain kinds of security attacks, with some even disastrous. NPSec is a top workshop focusing on cutting-edge research with a broad range of topics related to secure network protocols, aiming to advance this crucially important field.

This year's NPSec program consists of a keynote speech and three exciting sessions composed of nine papers. We begin this year's NPSec program with a keynote speech by Dr. Dan Massey that challenges the research community to reconsider the problem of Distributed Denial of Service (DDoS) attacks. We will then have three technical sessions that investigate different aspects of network protocol security. Our first session is on security for software-defined networking (SDN) and the Internet. We are pleased to include papers addressing SDN application control, DDoS in the era of cloud computing and SDN, and security work via privacy-preserving AppCoins. The second session will focus on protocol security analysis, including papers striving to understand the attack surface of networked systems, the security options for the real-time transport protocol framework, and vulnerabilities of RFID security Protocol. Our last session is on new security protocols and mechanisms, including those for constrained environments, key-exchange protocol, and a new web spam prevention service using CAPTCHAs and puzzles.

We are confident that you will find the papers and presentations from this year's NPSec program to be exciting, informative, inspiring, and will have a lasting impact.

Best regards,

Jun Li
University of Oregon

Wei Zhao
University of Macau

ICNP 2014 Conference Organizing Committee

General Chair

- Jasleen Kaur, University of North Carolina at Chapel Hill, USA
- George Rouskas, North Carolina State University, USA

Program Co-Chairs

- Mohamed Gouda, University of Texas at Austin, USA
- Alex Liu, Michigan State University, USA

Steering Committee

- Kevin Almeroth, University of California at Santa Barbara, USA
- Ken Calvert (Chair), University of Kentucky, USA
- Sonia Fahmy, Purdue University, USA
- Mohamed Gouda, University of Texas at Austin, USA
- Timothy G. Griffin, University of Cambridge, UK
- Teruo Higashino, Osaka University, Japan
- David Lee, HP Labs, USA
- K.K. Ramakrishnan, Rutgers University, USA
- Krishan Sabnani, Bell Laboratories, USA

Finance Chair:

- Melissa Wood, University of North Carolina at Chapel Hill, USA

Workshop Chairs

- Haiying Shen, Clemson University, USA
- Jonathan Sobel, Cisco Systems, USA

Ph.D. Forum Chairs

- Jay Aikat, University of North Carolina at Chapel Hill, USA
- Lina Battestilli, North Carolina State University, USA

Publicity Chairs

- James Martin, Clemson University, USA
- Wenye Wang, North Carolina State University, USA

EDAS Chair

- Muhammad Shahzad (shahzadm@cse.msu.edu), Michigan State University, USA

Publications Chair

- Lan Wang, University of Memphis, USA

Travel Grant Chairs

- Chen Qian, University of Kentucky, USA
- Chuan Yue, University of Colorado Colorado Springs, USA

Web Chair

- Jasleen Kaur, University of North Carolina at Chapel Hill, USA

ICNP 2014 TPC Area Chairs

- Kevin Almeroth, University of California, Santa Barbara, USA
- Anish Arora, The Ohio State University, USA
- Saurabh Bagchi, Purdue University, USA
- Anat Bremler-Barr, Interdisciplinary Center Herzliya, Israel
- Ken Calvert, University of Kentucky, USA
- Shigang Chen, University of Florida, USA
- Yan Chen, Northwestern University, USA
- JJ Garcia-Luna-Aceves, University of California at Santa Cruz, USA
- K.K. Ramakrishnan, Rutgers University, USA
- Simon Lam, The University of Texas at Austin, USA
- Baochun Li, University of Toronto, Canada
- Yunhao Liu, Tsinghua University, China
- Vishal Misra, Columbia University, USA
- Cristina Nita-Rotaru, Purdue University, USA
- Chunming Qiao, State University of New York at Buffalo, USA
- Lili Qiu, The University of Texas at Austin, USA
- Jia Wang, AT&T Labs - Research, USA
- Jie Wu, Temple University, USA
- Guoliang Xue, Arizona State University, USA
- Ellen Zegura, Georgia Institute of Technology, USA

ICNP 2014 Technical Program Committee (Regular Paper Track)

- Tarek Abdelzaher, University of Illinois, Urbana Champaign, USA
- Dharma Agrawal, University of Cincinnati, USA
- Mostafa Ammar, Georgia Institute of Technology, USA
- Michela Becchi, University of Missouri - Columbia, USA
- Tracy Camp, Colorado School of Mines, USA
- Guohong Cao, The Pennsylvania State University, USA
- Jiannong Cao, Hong Kong Polytechnic Univ, Hong Kong
- Fei Chen, MSU/VMware, USA
- Songqing Chen, George Mason University, USA
- Xiuzhen Cheng, George Washington Univ, USA
- Song Chong, KAIST, Korea
- Jorge Cobb, The University of Texas at Dallas, USA
- Samir Das, Stony Brook University, USA
- David Du, University of Minnesota, USA
- Nick Duffield, Rutgers University, USA
- Eylem Ekici, The Ohio State University, USA
- Xiaoming Fu, University of Goettingen, Germany
- Wei Gao, University of Tennessee, USA
- Erol Gelenbe, Imperial College London, United Kingdom
- Sergey Gorinsky, IMDEA Networks Institute, Spain
- Yong Guan, Iowa State University, USA
- Roch Guerin, Washington University in Saint Louis, USA
- Jinsong Han, Xi'an Jiaotong University, China
- Toru Hasegawa, Osaka University, Japan
- David Hay, The Hebrew University of Jerusalem, Israel
- Tian He, University of Minnesota, USA
- Ahmed Helmy, University of Florida, USA
- Teruo Higashino, Osaka University, Japan
- Muhammad Ilyas, National University of Sciences & Technology, Pakistan
- Sugih Jamin, University of Michigan, USA
- Dimitrios Koutsonikolas, University at Buffalo, SUNY, USA

- Sandeep Kulkarni, Michigan State University, USA
- Aleksandar Kuzmanovic, Northwestern University, USA
- Franck Le, IBM T. J. Watson, USA
- Jun Li, University of Oregon, USA
- Li Erran Li, Bell Labs, Alcatel-Lucent, USA
- Mo Li, Nanyang Technological University, Singapore
- Qinghua Li, University of Arkansas, USA
- Qun Li, College of William and Mary, USA
- Xiang-Yang Li, Illinois Institute of Technology, USA
- Ben Liang, University of Toronto, Canada
- Bin Liu, Tsinghua University, China
- Jiangchuan Liu, Simon Fraser University, Canada
- Wenjing Lou, Virginia Tech, USA
- Songwu Lu, University of California at Los Angeles, USA
- John Chi Shing Lui, Chinese University of Hong Kong, Hong Kong
- Anirban Mahanti, NICTA, Australia
- Ibrahim Matta, Boston University, USA
- Tommaso Melodia, State University of New York at Buffalo, USA
- Matt Mutka, Michigan State University, USA
- Thyaga Nandagopal, National Science Foundation, USA
- Vijay Pai, Purdue University, USA
- Kihong Park, Purdue University, USA
- Ihsan Ayyub Qazi, Lahore University of Management Sciences (LUMS), Pakistan
- Chen Qian, University of Kentucky, USA
- Srinivasan Ramasubramanian, University of Arizona, USA
- Kui Ren, State University of New York at Buffalo, USA
- Henning Schulzrinne, Columbia University, USA
- M. Zubair Shafiq, Michigan State University, USA
- Muhammad Shahzad, Michigan State University, USA
- Haiying Shen, Clemson University, USA
- Simone Silvestri, Pennsylvania State University, USA
- Haoyu Song, Huawei Technologies, USA
- Mudhakar Srivatsa, IBM T.J. Watson Research Center, USA
- Aaron Striegel, University of Notre Dame, USA
- Kun Tan, Microsoft Research Asia, China
- Shaojie Tang, Temple University, Philadelphia, PA, USA
- Don Towsley, University of Massachusetts at Amherst, USA
- Harsha V. Madhyastha, UC Riverside, USA
- Anduo Wang, University of Pennsylvania, USA
- Wei Wang, Nanjing University, China
- Wenye Wang, NC State University, USA
- Xinbing Wang, Shanghai Jiaotong University, China
- Li Xiao, Michigan State University, USA
- Y. Richard Yang, Yale University, USA
- Yaling Yang, Virginia Tech, USA
- David Yau, Purdue University, USA
- Lei Ying, Arizona State University, USA
- Arun Vishwanath, IBM Research, Australia
- Beichuan Zhang, University of Arizona, USA
- Hongwei Zhang, Wayne State University, USA
- Junshan Zhang, Arizona State University, USA
- Yanchao Zhang, Arizona State University, USA
- Yin Zhang, University of Texas at Austin, USA
- Zhi-Li Zhang, University of Minnesota, USA
- Wenchao Zhou, Georgetown University, USA

ICNP 2014 Technical Program Committee (Concise Paper Track)

- Jay Aikat, University of North Carolina at Chapel Hill, USA
- Marco Ajmone Marsan, Politecnico di Torino, Italy
- Ehab Al-Shaer, University of North Carolina Charlotte, USA
- Lachlan Andrew, Monash University, Australia
- Urtzi Ayesta, CNRS-LAAS and Ikerbasque-University of the Basque Country, Spain
- Bruhadeshwar Bezawada, International Institute of Information Technology, India
- Hrishikesh Bhattacharya, Indraprastha Institute of Information Technology, India
- Jun Bi, Tsinghua University, China
- Antonio Capone, Politecnico di Milano, Italy
- Fei Chen, The Chinese University of Hong Kong, China
- Mooi Choo Chuah, Lehigh University, USA
- Haipeng Dai, Nanjing University, China
- Giuseppe Di Battista, Roma Tre University, Italy
- Christophe Diot, Technicolor, France
- Fahad Dogar, Microsoft Research, United Kingdom
- Kai Han, Zhongyuan University of Technology, China
- Hongbo Jiang, Huazhong University of Science and Technology, China
- Thomas Karagiannis, Microsoft Research, United Kingdom
- Sanglu Lu, Nanjing University, China
- Patrick Pak-Ching Lee, The Chinese University of Hong Kong, Hong Kong
- Ben Leong, National University of Singapore, Singapore
- Keqiu Li, Dalian University of Technology, China
- Jorg Liebeherr, University of Toronto, Canada
- Fangming Liu, Huazhong University of Science and Technology, China
- Deep Medhi, University of Missouri-Kansas City, USA
- Theodoros Salonidis, IBM Research, USA
- Stefano Vissicchio, Universite Catholique de Louvain, Belgium
- Qingjun Xiao, SouthEast University, China
- Gaogang Xie, Institute of Computing Technology, Chinese Academy of Sciences, China
- Sheng Zhong, Nanjing University, China
- Xiaojun Zhu, Nanjing University, China

ICNP 2014 PhD Forum COMMITTEES

Technical Program Committee Chairs

- Jay Aikat, University of North Carolina at Chapel Hill
- Lina Battestilli, North Carolina State University

Technical Program Committee (The TPC consists of senior researchers and professors but also of some selected PhD students.)

- Trisha Biswas, Aruba Networks
- Savera Tanwir, NCSU
- Claris Castillo, RENCI

- Chen Qian, University of Kentucky
- Matthias Waehlich, Freie Universitaet Berlin
- Luca Cittadini, Universita' Roma Tre
- Ben Newton, UNC-Chapel Hill
- Rubén Cuevas Rumin, Universidad Carlos III de Madrid
- Li Hongxing, UC Davis
- Song Han, University of Texas
- Ming Li, Utah State University
- Suman Jana, University of Texas at Austin
- Tianyin Xu, UC San Diego
- Gareth Tyson, Queen Mary University
- Matthew Grosvenor, University of Cambridge
- Christian Rothenberg, University of Campinas
- Xiaozheng Tie, University of Massachusetts Amherst
- Cristian Lumezanu, NEC Labs research staff – NEC
- Thomas Schmidt, HAW Hamburg
- Mike Wittie, Montana State University
- George Xylomenos, Athens University of Economics and Business
- Eric Rozner, IBM
- Qiang Xu, NEC Labs

Computer and Networking Experimental Research Using Testbeds (CNERT 2014) COMMITTEES

Steering Committee

- Chip Elliot, BBN Technologies, USA
- Kaiqi Xiong, Rochester Institute of Technology, USA
- Max Ott, NICTA, Australia

Technical Program Committee Co-Chairs

- Mark Berman, BBN Technologies, USA
- Thanasis Korakis, Polytechnic Institute of New York University
- Bing Wang, University of Connecticut, USA
- Kaiqi Xiong, Rochester Institute of Technology, USA

Publication/Submission Chair

- Yong Guan, Iowa State University, USA

Web Chair

- Yin Pan, Rochester Institute of Technology, USA

Publicity Co-Chairs

- Niky Riga, BBN Technologies, USA
- Vicraj Thomas, BBN Technologies, USA

Demo Chair

- Sarah Edwards, BBN Technologies, USA

Technical Program Committee

- Abraham Matta, Boston University, USA
- Aki Nakao, University of Tokyo, Japan
- Andy Bavier, Princeton University, USA
- Bing Wang, University of Connecticut, USA
- Christos Papadopoulos, Colorado State University, USA
- Eric Keller, University of Colorado, USA
- Ethan Katz-Bassett, University of Southern California, USA
- Ilya Baldine, RENCI, USA
- Ivan Seskar, Rutgers University, USA

- James Griffioen, University of Kentucky, USA
- Jay Aikat, UNC, USA
- KC Wang, Clemson University, USA
- Michael Stanton, Universidade Federal Fluminense BRAZIL
- Mike Zink, University of Massachusetts Amherst, USA
- Niky Riga, BBN Technologies, USA
- Paul Mueller, University of Kaiserslautern, Germany
- Sarah Edwards, BBN Technologies, USA
- Vicraj Thomas, BBN Technologies, USA
- Violet R. Syrotiuk, Arizona State University, USA
- Yaoqing Liu, Clarkson University, USA
- Yin Pan, Rochester Institute of Technology, USA
- Yong Guan, Iowa State University, USA
- Zhi-Li Zhang, University of Minnesota, USA

Control, Operation, and application in SDN Protocols (COOLSDN 2014)

COMMITTEES

Technical Program Chairs

- Y. Richard Yang, Yale Univ., USA
- Jun Bi, Tsinghua Univ., China
- Guofei Gu, Texas A&M Univ., USA

Publications Chair

- Guang Yao, Tsinghua Univ., China

Technical Program Committee

- Jun Bi, Tsinghua Univ., China
- Guofei Gu, Texas A&M Univ., USA

- Hongxin Hu, Clemson University, USA
- JongWon Kim, GIST, Korea
- Ted Kwon, SNU, Korea
- Dan Li, Tsinghua University, China
- Li Erran Li, Bell Labs, USA
- Diego Lopez, Telefónica I+D, Spain
- Yan Ma, BUPT, China
- Dave Meyer, Brocade, USA
- Akihiro Nakao, Univ. of Tokyo, Japan
- Yasuo Okabe, Kyoto Univ., Japan
- Seungwon Shin, KAIST, Korea
- Alex Sprintson, Texas A&M Univ., USA
- Filip De Turck, Ghent University-iMinds, Belgium
- Laurent Vanbever, Princeton Univ., USA
- Javier García Villalba, Complutense Univ. of Madrid, Spain
- Jianping Wang, City Univ. of Hong Kong, Hongkong
- Chunming Wu, Zhejiang Univ., China
- Gaogang Xie, China Academy of Science, China
- Y. Richard Yang, Yale Univ. USA
- Guang Yao, Tsinghua Univ., China

Cognitive Radio Architectures for Broadband (CRAB 2014)

COMMITTEES

Technical Program Chairs

- Xiuzhen (Susan) Cheng, George Washington University
- Tommaso Melodia, University at Buffalo, The State University of New York
- Yalin E. Sagduyu, Intelligent Automation Inc.
- Yi Shi, Intelligent Automation Inc.
- Alexander M. Wyglinski, Worcester Polytechnic Institute

Technical Program Committee

- Ahmed Abdel-Hadi, Virginia Tech

- Özgür Akan, Koc University
- Randall Berry, Northwestern University
- Kaigui Bian, Peking University
- Joseph Camp, Southern Methodist University
- Yingying Chen, Stevens Institute of Technology
- Marwan Krunz, University of Arizona
- Ming Li, Utah State University
- Allen B. Mackenzie, Virginia Tech
- Shiwen Mao, Auburn University
- Tim O'Shea, Virginia Tech
- Kui (Quinn) Ren, State University of New York at Buffalo
- Yang Song, IBM Almaden Research Center
- Ravi Tandon, Virginia Tech
- Wade Trappe, Rutgers University
- Seluk Uluagac, Georgia Institute of Technology
- Yaling Yang, Virginia Tech
- Junshan Zhang, Arizona State University
- Weiyi Zhang, AT&T Labs Research

Ninth Workshop on Secure Network Protocols (NPsec 2014)

COMMITTEES

Technical Program Committee Chairs

- Jun Li, University of Oregon (co-chair)
- Wei Zhao, University of Macau (co-chair)

Best Paper Award Committee

- Fred Baker, Cisco Research Center
- Olaf Maennel, Loughborough University
- Tilman Wolf, University of Massachusetts

Steering Committee

- Sonia Fahmy, Purdue University (chair)

- George Kesidis, Penn State University
- Cristina Nita-Rotaru, Purdue University
- Gene Tsudik, UC Irvine

Technical Program Committee

- Johanna Amann, International Computer Science Institute
- Fred Baker, Cisco Research Center
- Randy Bush, Internet Initiative Japan
- Wu-chang Feng, Portland State University
- Stephen Kent, BBN Technologies

- Huan Li, Beihang University
- Qi Li, ETH Zurich
- Olaf Maennel, Loughborough University
- Daniel Massey, US Department of Homeland Security
- Colin Perkins, University of Glasgow
- Peter Reiher, UCLA
- Lan Wang, University of Memphis
- Brian Weis, Cisco Systems
- Tilman Wolf, University of Massachusetts
- Ying Zhang, Ericsson Research
- Xukai Zou, School of Science, Purdue University-Indianapolis

Control, Operation, and application in SDN Protocols (COOLSDN 2014)

Tuesday, October 21

09:00 – 09:10

CoolSDN Opening

Room: Oak Forest B

09:10 – 10:00

CoolSDN Keynote speech

Room: Oak Forest B

Chair: Jun Bi (Tsinghua University, China)

Keynote speaker: Steve Garrison (Pica8)

10:00 - 10:30

Break

Room: Esplanade

10:30 - 12:00

CoolSDN 1: SDN Control Plane

Room: Oak Forest B

Chair: Alex Sprintson (Texas A&M University)

SDN Management Layer: Design Requirements and Future Direction

Yuefeng Wang, Ibrahim Matta (Boston University, USA)

Traffic Engineering in SDN/OSPF Hybrid Network

Yingya Guo, Zhiliang Wang, Xia Yin, Xingang Shi, Jianping Wu (Tsinghua University, China)

Orion: A Hybrid Hierarchical Control Plane of Software-Defined Networking for Large-Scale Networks

Yonghong Fu, Jun Bi, Kai Gao, Ze Chen, Jianping Wu (Tsinghua University, China), Bin Hao (H3C)

12:00 - 13:30

Lunch

Room: Oak Forest A

13:30 - 15:00

CoolSDN 2: SDN Data Plane-1

Room: Oak Forest B

Chair: Chen Qian (University of Kentucky)

Forwarding Programming in Protocol-Oblivious Instruction Set

Jingzhou Yu, Xiaozhong Wang, Jian Song, Yuanming Zheng, Haoyu Song (Huawei)

Data Plane Programmability in SDN

Hamid Farhady, HyunYong Lee, Akihiro Nakao (University of Tokyo, Japan)

Extending OpenFlow for Service Insertion and Payload Inspection

Robinson Udechukwu, Rudra Dutta (North Carolina State University, USA)

15:00 - 15:30

Break

Room: Esplanade

15:30 - 16:00

CoolSDN 2: SDN Data Plane-2

Room: Oak Forest B

Stochastic Pre-Classification for SDN Data Plane Matching

Luke McHale, Christopher Jasson Casey, Paul V Gratz, Alex Sprintson (Texas A&M University, USA)

16:00 - 17:00

CoolSDN Panel

Room: Oak Forest B

Panel Topic: *SDN Research: Academic and Industry Perspectives*

Panel Moderator: Andi Voellmy (Cisco)

Panelists:

Alex Sprintson (Texas A&M University)

Chen Qian (University of Kentucky)

Steve Garrison (Pica8)

Jasson Casey (Flowgrammable)

Cognitive Radio Architectures for Broadband (CRAB 2014)

Tuesday, October 21

8:45 - 10:00

Keynote

Room: Pin Oak

Chair: Kaushik Chowdhury (Northeastern University, USA):
“Closing the loop in cognitive radio networks:
Towards higher layer protocol design and user
applications”

10:00 - 10:30

Break

Room: Esplanade

10:30 - 12:00

Session 1: Cognitive Network Perspectives

Room: Pin Oak

Chair: Yasaman Keshtkarjahromi (University of Illinois at Chicago, USA)
Virtual Duplex: Scaling Dense WLANs and Eliminating Contention Asymmetry
Adriana B. Flores (Rice University, USA) and Edward W. Knightly (Rice University, USA)
Age of Information
Sastry Kompella (Navy Research Lab, USA)

12:00 - 13:30

Lunch

Room: Oak Forest A

13:30 - 15:00

Session 2: Cognitive Network Protocols

Room: Pin Oak

Chair: Tim O'Shea (Virginia Tech, USA)
Performance Evaluation of Cognitive-Based Admission Control for Integrated Femtocell-WiFi Wireless Networks
Salman A AlQahtani (King Saud University, Saudi Arabia)
Quality Improvement in Instantly Decodable Network Coding
Yasaman Keshtkarjahromi (University of Illinois at Chicago, USA)

15:00 - 15:30

Break

Room: Esplanade

15:30 - 16:00

Session 3: Cognitive Network Performance

Room: Pin Oak

Testbed for Cognitive Wireless Networks
Yi Shi (Intelligent Automation, USA)

Ninth Workshop on Secure Network Protocols (NPsec 2014)

Tuesday, October 21

08:45 – 09:00

NPsec: Welcome Remarks

Room: Willow Oak

09:00 - 10:00

NPsec: Keynote

Room: Willow Oak

Dan Massey (DHS S&T Cyber Security Division): “A New Look at the Old DDoS Problem”

10:00 - 10:30

Break

Room: Esplanade

10:30 - 12:00

NPsec Session 1: Security for Software-Defined Networking and the Internet

Room: Willow Oak

Chair: Eric Osterweil (Verisign Labs, USA)

OperationCheckpoint: SDN Application Control

Sandra Scott-Hayward (Queen's University Belfast, United Kingdom); Christopher Kane (Queen's University Belfast, United Kingdom); Sakir Sezer (Queens University Belfast, United Kingdom)

DDoS Attack Protection in the Era of Cloud Computing and Software-Defined Networking

Bing Wang (Virginia Tech, USA); Yao Zheng (Virginia Polytechnic Institute and State University, USA); Wenjing Lou (Virginia Tech, USA); Thomas Hou (Virginia Tech, USA)

Disincentivizing/Incentivizing Malicious/Honest Behavior on the Internet Via Privacy-preserving AppCoins

Karim El Defrawy (HRL Laboratories, USA); Joshua Lampkins (UCLA, USA)

12:00 - 13:30

Lunch

Room: OAK FOREST A

13:30 - 15:00

NPsec Session 2: Security Protocol Analysis

Room: Willow Oak

Chair: Alvaro Retana (Cisco, USA)

The Shape and Size of Threats: Defining a Networked System's Attack Surface

Eric Osterweil (Verisign Labs, USA); Danny McPherson (Verisign, Inc., USA); Lixia Zhang (University of California at Los Angeles, USA)

Reflections on Security Options for the Real-time Transport Protocol Framework

Colin Perkins (University of Glasgow, United Kingdom)

Vulnerabilities of RFID Security Protocol Based on Chaotic Maps

Mete Akgün (Tubitak UEKAE, Turkey); M. Ufuk Caglayan (Bogazici University, Turkey)

15:00 - 15:30

Break

Room: Esplanade

15:30 - 17:00

NPsec Session 3: New Security Protocols and Mechanisms

Room: Willow Oak

Chair: Colin Perkins (University of Glasgow, United Kingdom)

Delegated Authenticated Authorization for Constrained Environments

Stefanie Gerdes (Universitaet Bremen, Germany); Olaf Bergmann (Universitaet Bremen, Germany); Carsten Bormann (Universität Bremen, Germany)

Heisenberg Groups as Platform for the AAG Key-Exchange Protocol

Delaram Kahrobaei (New York City College of Technology (CUNY), USA); Ha Lam (City University of New York, USA)

MetaCAPTCHA: A Metamorphic Throttling Service for the Web

Akshay Dua (Portland State University, USA); Thai Bui (Portland State University, USA); Tien Le (Portland State University, USA); Nhan Huynh

(Portland State University, USA); Wu-chang Feng (Portland State University, USA)

17:00 - 17:15

Concluding Remarks

Room: Willow Oak

ICNP 2014 Main Conference Program Overview

Wednesday 10/22/2014		Thursday 10/23/2014	
8:30-9:00	Welcome	8:30-9:30	Keynote
9:00-10:00	Keynote	9:30-10:00	Break
10:00-10:30	Break	10:00-11:30	Session 4 (Routing)
10:30-12:00	Session 1 (Cloud Computing & Data Center Networking)	11:30-1:00	Lunch
12:00-1:30	Lunch	1:00-2:00	Panel
1:30-3:00	Session2 (Cyber Physical Systems)	2:00-2:30	Break
3:00-3:30	Break	2:30-4:00	Session 6 (Security and Pricing)
3:30-5:00	Session 3 (Internet Measurements)	4:00-4:30	Break
5:00-6:00	Posters	4:30-6:00	Session 8 (Network Algorithms)
6:00-6:30	Break		
6:30-8:00	Banquet		

Thursday 10/23/2014		Friday 10/24/2014	
8:30-9:30	Keynote	8:30-10:00	Session 10 (Forwarding Plane)
9:30-10:00	Break		
10:00-11:30	Session 5 (Networking and Security Algorithms)	10:00-10:30	Break
11:30-1:00	Lunch	10:30-12:00	Session 11 (Wireless Networks)
1:00-2:00	Panel	12:00-1:30	Lunch
2:00-2:30	Break		
2:30-4:00	Session 7 (Transport)		
4:00-4:30	Break		
4:30-6:00	Session 9 (Routing)		

ICNP 2014 Main Conference Technical Program

Tuesday, October 21

18:30 - 20:00

Welcome Reception

Room: Oak Forest A

Wednesday, October 22

08:30 – 09:00

Welcome Address

Room: Oak Forest B

09:00 – 10:00

Keynote

Room: Oak Forest B

Speaker: Mike Reiter (UNC Chapel Hill, USA)

“Side Channels in Multi-Tenant Environments”

10:00 – 10:30

Break

Room: Esplanade

10:30 - 12:00

Session 1: Cloud Computing & Data Center Networking

Room: Oak Forest B

Chair: Xiaoming Fu

On Exploiting Dynamic Execution Patterns for Workload Offloading in Mobile Cloud Applications

Wei Gao (University of Tennessee, USA) Yong Li (The University of Tennessee, Knoxville, USA); Haoyang Lu (University of Tennessee, USA); Ting Wang (IBM Research, USA); Cong Liu (The University of Texas at Dallas, USA)

Space Shuffle: A Scalable, Flexible, and High-Bandwidth Data Center Network

Ye Yu (University of Kentucky, USA); Chen Qian (University of Kentucky, USA)

Cross-VM Covert Channel Risk Assessment for Cloud Computing: An Automated Capacity Profiler

Rui Zhang (City University of Hong Kong, Hong Kong);

Wen Qi (City University of Hong Kong, Hong Kong); Jianping Wang (City University of Hong Kong, Hong Kong)

On Design and Performance of Cloud-Based Distributed Interactive Applications

Haiyang Wang (University of Minnesota at Duluth, USA); Ryan Shea (Simon Fraser University, Canada); Xiaoqiang Ma (Simon Fraser University, Canada); Feng Wang (The University of Mississippi, USA); Jiangchuan Liu (Simon Fraser University, Canada)

12:00 - 13:30

Lunch

Room: Oak Forest A

13:30 - 15:00

Session 2: Cyber-Physical Systems

Room: Oak Forest B

Chair: Hrishikesh B. Acharya

CBID: A Customer Behavior Identification System Using Passive Tags

Jinsong Han (Xi'an Jiaotong University, P.R. China); Dan Ma (Xi'an Jiaotong University, P.R. China); Han Ding (Xi'an Jiaotong University, P.R. China); Chen Qian (University of Kentucky, USA); Wei Xi (Xi'an Jiaotong University, P.R. China); Zhi Wang (Xi'an Jiaotong University, P.R. China); Zhiping Jiang (Xian Jiaotong University, P.R. China); Longfei Shangguan (Hong Kong University of Science and Technology, Hong Kong)

Fast Counting the Key Tags in Anonymous RFID Systems

Xiulong Liu (Dalian University of Technology, P.R. China); Keqiu Li (Dalian University of Technology, P.R. China); Heng Qi (Dalian University of Technology, P.R. China); Bin Xiao (The Hong Kong Polytechnic University, Hong Kong); Xin Xie (Dalian University of Technology, P.R. China)

Scalable Data Access Control in RFID-Enabled Supply Chain

Saiyu Qi (Hong Kong university of science and Technology, Hong Kong); Yuanqing Zheng (Nanyang Technological University, Singapore); Mo Li (Nanyang Technological University, Singapore); Yunhao Liu (Tsinghua University, P.R. China); Jinli Qiu (Xi'an Jiaotong University, P.R. China)

Cost-minimizing Mobile Access Point Deployment in Workflow-based Mobile Sensor Networks

Haiming Jin (University of Illinois at Urbana-Champaign, USA); He Huang (University of Illinois at Urbana-Champaign, USA); Lu Su (The State University of New York

at Buffalo, USA); Klara Nahrstedt (University of Illinois at Urbana-Champaign, USA)

15:00 – 15:30

Break

Room: Esplanade

15:30 – 17:00

Session 3: Internet monitoring and measurement

Room: Oak Forest B

Chair: Deep Medhi

Every Packet Counts: Fine-Grained Delay and Loss Measurement with Reordering

Jiliang Wang (Tsinghua University, P.R. China); Shuo Lian (Xi'an Jiaotong University, P.R. China); Wei Dong (Zhejiang University, P.R. China); Yunhao Liu (Tsinghua University, P.R. China); Xiang-Yang Li (Illinois Institute of Technology, USA)

Can Bandwidth Estimation Tackle Noise At Ultra-High Speeds?

Qianwen Yin (UNC Chapel Hill, USA); Jasleen Kaur (University of North Carolina at Chapel Hill, USA); F. Donelson Smith (University of North Carolina at Chapel Hill, USA)

Network Path Capacity Comparison Without Accurate Packet Time Information

Ertong Zhang (University of Nebraska-Lincoln, USA); Lisong Xu (University of Nebraska-Lincoln, USA)

Estimating the Persistent Spreads in High-speed Networks

Qingjun Xiao (SouthEast University of China, USA); Yan Qiao (University of Florida, USA); Zhen Mo (University of Florida, USA); Shigang Chen (University of Florida, USA)

17:00 – 18:00

Posters Session

Room: Esplanade

18:30 – 20:00

Conference Banquet

Room: Oak Forest A&B

Thursday, October 23

08:30 – 09:00

Keynote

Room: Oak Forest B

Speaker: John C.S. Lui (CUHK, Hong Kong)

“Sampling Large Networks: Algorithms and Applications”

09:30 – 10:00

Break

Room: Esplanade

10:00 – 11:30

Session 4: Routing

Room: Oak Forest B

Chair: Wenye Wang

Multipath Routing From a Traffic Engineering Perspective: How Beneficial is It

Xuan Liu (University of Missouri-Kansas City, USA); Sudhir Mohanraj (University of Missouri-Kansas City, USA); Michal Pióro (Warsaw University of Technology, Poland); Deep Medhi (University of Missouri-Kansas City, USA)

Routing to Multi-Instantiated Destinations: Principles and Applications

JJ Garcia-Luna-Aceves (University of California at Santa Cruz, USA)

Preferential Link Tomography: Monitor Assignment for Inferring Interesting Link Metrics

Yi Gao (Zhejiang University, P.R. China); Wenbin Wu (Zhejiang University, P.R. China); Wei Dong (Zhejiang University, P.R. China); Chun Chen (Zhejiang University, P.R. China); Xiang-Yang Li (Illinois Institute of Technology, USA); Jiajun Bu (Zhejiang University, P.R. China)

Formal Modeling and Systematic Black-Box Testing of SDN Data Plane

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)

10:00 – 11:30

Session 5: Networking and Security Algorithms

Room: Willow Oak

Chair: Chen Qian

SensCrypt: A Secure Protocol for Managing Low Power Fitness Trackers

Mahmudur Rahman (Florida International University, USA); Bogdan Carbutar (Florida International University, USA); Umut Topkara (IBM Research, USA)

Polylogarithmic Competitive Algorithm for Energy

Minimization in Optical WDM Networks

Yangguang Shi (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)

On Measuring One-Way Path Metrics From a Web Server

Xiapu Luo (The Hong Kong Polytechnic University, Hong Kong); Xue Lei (HK Polyu, Hong Kong); Cong Shi (Georgia Institute of Technology, USA); Yuru Shao (The Hong Kong Polytechnic University, Hong Kong); Chenxiong Qian (The Hong Kong Polytechnic University, Hong Kong); Edmond W. W. Chan (The Hong Kong Polytechnic University, Hong Kong)

Semi-Synchronous Channel Access for Full-duplex Wireless Networks

Xiufeng Xie (University of Wisconsin-Madison, USA); Xinyu Zhang (University of Wisconsin-Madison, USA)

Secgras: Security Group Analysis as a Cloud Service

Cheng Jin (University of Minnesota, USA); Abhinav Srivastava (AT&T Labs--Research, USA); Yu Jin (AT&T Labs Research, USA); Zhi-Li Zhang (University of Minnesota, USA)

11:30 – 13:00

Lunch

Room: Oak Forest A

13:00 – 14:00

Panel

Room: Oak Forest B

14:00 – 14:30

Break

Room: Esplanade

14:30 – 16:00

Session 6: Security and Pricing

Room: Oak Forest B

Chair: Wei Gao

You are How You Touch: User Verification on Smartphones Via Tapping Behaviors

Nan Zheng (College of William and Mary, USA); Kun Bai (IBM T.J. Watson Research Center, USA); Hai Huang (IBM T. J. Watson Research Center, USA); Haining Wang (College of William and Mary, USA)

OrthCredential: A New Network Capability Design for

High-Performance Access Control

Hao Cai (University of Massachusetts, Amherst, USA); Xinming Chen (University of Massachusetts, Amherst, USA); Tilman Wolf (University of Massachusetts, USA)

Fair Pricing in the Sky: Truthful Frequency Allocation with Dynamic Spectrum Supply

Qihang Sun (Wuhan University, P.R. China); Qian Wang (Wuhan University, P.R. China); Kui Ren (State University of New York at Buffalo, USA); Xiaohua Jia (City University of Hong Kong, Hong Kong)

Pay-As-You-Go Pricing and Competition in Congested Network Service Markets

Richard T. B. Ma (National University of Singapore, Singapore)

14:30 – 16:00

Session 7: Transport

Room: Willow Oak

Chair: J. J. Garcia-Luna-Aceves

Deconstructing MPTCP Performance
Behnaz Arzani (University of Pennsylvania, USA); Alexander Gurney (University of Pennsylvania, USA); Sitian Cheng (University of Pennsylvania, USA); Roch Guérin (Washington University in St. Louis, USA); Boon Thau Loo (University of Pennsylvania, USA)

Multi-Path TCP: Boosting Fairness in Cellular Networks

Ioannis Broustis (AT&T Labs Research, USA); Bo Han (AT&T Labs Research, USA); Rittwik Jana (AT&T Labs Research, USA); K. K. Ramakrishnan (Rutgers University, USA); Nemmara K. Shankaranarayanan (AT&T Laboratories - Research, USA); Rakesh K Sinha (AT&T Labs - Research, USA); Ashwin Sridharan (AT&T, USA)

TCP Performance Over Mobile Networks in High-speed Mobility Scenarios

Qingyang Xiao (Tsinghua University, P.R. China); Ke Xu (Tsinghua University, P.R. China); Dan Wang (The Hong Kong Polytechnic University, Hong Kong); Li Li (Tsinghua University, P.R. China); Yifeng Zhong (Tsinghua University, P.R. China)

Composing Heterogeneous SDN Controllers with FlowBricks

Advait A Dixit (Purdue University, USA); Kirill Kogan (Purdue University, USA); Patrick Eugster (Purdue University, USA)

Optimization Models for Congestion Mitigation in Virtual Networks

Jocelyne Elias (Université Paris Descartes - Sorbonne Paris Cité, France); Fabio Martignon (Université Paris - Sud, France); Stefano Paris (Université Paris Descartes - Sorbonne Paris Cité, France); Jianping Wang (City University of Hong Kong, Hong Kong)

16:00 - 16:30

Break

Room: Esplanade

16:30 - 18:00

Session 8: Network Algorithms

Room: Oak Forest B

Chair: Jun Bi

Rethinking Packet Classification for Global Network View of Software-Defined Networking

Takeru Inoue (NTT Network Innovation Labs., Japan); Toru Mano (NTT Network Innovation Labs., Japan); Kimihiro Mizutani (NTT Network Innovation Labs., Japan); Shin-ichi Minato (Hokkaido University, Japan); Osamu Akashi (NTT Network Innovation Labs., Japan)

Meta-algorithms for Software-based Packet Classification

Peng He (Institute of Computing Technology Chinese Academy of Sciences, P.R. China); Gaogang Xie (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Kavé Salamatian (LISTIC PolyTech, Université de Savoie Chambéry Annecy, France); Laurent Mathy (University of Liège, Belgium)

Collaborative Verification of Forward and Reverse Reachability in the Internet Data Plane

Hongkun Yang (University of Texas at Austin, USA); Simon S Lam (The University of Texas at Austin, USA)

Compressing IP Forwarding Tables: Realizing Information-theoretical Space Bounds and Fast Lookups Simultaneously

Attila Kőrösi (Budapest University of Technology and Economics, Hungary); János Tapolcai (Budapest University of Technology and Economics, Hungary); Bence Mihálka (Budapest University of Technology and Economics, Hungary); Gábor Mészáros (Budapest University of Technology and Economics, Hungary); Gábor Rétvári (Budapest University of Technology and Economics, Hungary)

16:30 - 18:00

Session 9: Routing

Room: Willow Oak

Chair: Tian He

Stochastic Planning for Content Delivery: Unveiling the Benefits of Network Functions Virtualization

Michele Mangili (Université Paris-Sud & Laboratoire de Recherche en Informatique (LRI), France); Fabio Martignon (Université Paris-Sud, France); Antonio Capone (Politecnico di Milano, Italy)

LAAR: Long-range Radio Assisted Ad-Hoc Routing in MANETs

Ying Mao (University of Massachusetts Boston, USA); Jiayin Wang (University of Massachusetts Boston, USA); Bo Sheng (University of Massachusetts Boston, USA); Mooi Choo Chuah (Lehigh University, USA)

In-Band Update for Network Routing Policy Migration

Shuyuan Zhang (Princeton University, USA); Laurent Vanbever (Princeton University, USA); Sharad Malik (Princeton University, USA)

Freeway: Adaptively Isolating the Elephant and Mice Flows on Different Transmission Paths

Wei Wang (Institute of Computing Technology, CAS, P.R. China); Yi Sun (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Kai Zheng (IBM China Research Lab, P.R. China); Mohamed-Ali Kaafar (INRIA France, France); Dan Li (Tsinghua University, P.R. China); Zhongcheng Li (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China)

Analysis of Topology Algorithms for Commercial Airborne Networks

Ben Newton (University of North Carolina at Chapel Hill, USA); Jay Aikat (University of North Carolina at Chapel Hill, USA); Kevin Jeffay (University of North Carolina, USA)

Friday, October 24

08:30 – 10:00

Session 10: Forwarding Plane

Room: Oak Forest B

Chair: Ken Calvert

Regulating Monopolistic ISPs Without Neutrality

Jing Tang (Nanyang Technological University, Singapore); Richard T. B. Ma (National University of Singapore, Singapore)

PAC: Taming TCP Incast Congestion Using Proactive ACK Control

Wei Bai (Hong Kong University of Science of Technology, Hong Kong); Kai Chen (Hong Kong University of Science and Technology, Hong Kong); Haitao Wu (Microsoft Research Asia, P.R. China); Wuwei Lan (University of Science and Technology of China, Hefei, Anhui, P.R. China); Yangming Zhao (University of Electronic Science and Technology of China, P.R. China)

Constrained Maximum Flow in Stochastic Networks

Fernando A. Kuipers (Delft University of Technology, The Netherlands); Song Yang (Delft University of Technology, The Netherlands); Stojan Trajanovski (Delft University of Technology, The Netherlands); Ariel Orda (Technion, Israel)

Wireless Rate Adaptation Via Smart Pilot

Lu Wang (Hong Kong University of Science and Technology, Hong Kong); Xiaoke Qi (University of Chinese Academy of Sciences, P.R. China); Jiang Xiao (HKUST, Hong Kong); Kaishun Wu (HKUST, Hong Kong); Mounir Hamdi (Hong Kong University of Science and Technology, P.R. China); Qian Zhang (Hong Kong University of Science and Technology, Hong Kong)

10:00 - 10:30

Break

Room: Esplanade

10:30 -- 12:00

Session 11: Wireless Networks

Room: Oak Forest B

Chair: Kui Ren

Circular Pipelining: Minimizing Round-Trip Delay in Low-Duty-Cycle Wireless Networks

Jia Li (University of Minnesota, USA); Song Min Kim (University of Minnesota, USA); Tian He (University of Minnesota, USA)

Correlated Coding: Efficient Network Coding Under Correlated Unreliable Wireless Links

Shuai Wang (University of Minnesota, Twin Cities, USA); Song Min Kim (University of Minnesota, USA); Zhimeng Yin (Huazhong University of Science and Technology, P.R. China); Tian He (University of Minnesota, USA)

Exploiting Sender-based Link Correlation in Wireless Sensor Networks

Junghyun Jun (Indian Institute of Technology Ropar, India); Long Cheng (Singapore University of Technology and Design, Singapore); Liang He (Singapore University of Technology and Design, Singapore); Yu Gu (Singapore University of Technology and Design, Singapore); Ting Zhu (State University of New York at Binghamton, USA)

On the MAC for Power-Line Communications: Modeling Assumptions and Performance Tradeoffs

Christina Vlachou (EPFL, Switzerland); Albert Banchs (Universidad Carlos III de Madrid, Spain); Julien Herzen (EPFL, Switzerland); Patrick Thiran (EPFL, Switzerland)

12:00 -- 13:30

Lunch

Room: Oak Forest A

Computer and Networking Experimental Research Using Testbeds (CNERT)

Friday, October 24

08:50 – 9:00

Welcome

Room: Pin Oak

Mark Berman (BBN/GPO) and Bing Wang
(University of Connecticut)

09:00 - 10:00

Keynote

Room: Pin Oak

Chair: Mark Berman (BBN/GPO)

Tilman Wolf (University of Massachusetts, Amherst):
“An Economy Plane for the Internet - How to charge
for innovative network services”

10:00 - 10:30

Break

Room: Esplanade

10:30 - 12:10

Session I (3 long papers, one short paper, one work-in-progress)

Room: Pin Oak

Chair: Vicraj Thomas (BBN Technologies)

Programming Routing Policies for Video Traffic

Yuefeng Wang, Nabeel Akhtar and Ibrahim Matta
(Boston University)
(Long paper with demo)

In-Network Compute Extensions for Rate-Adaptive Content Delivery in Mobile Networks

Kiran Nagaraja, Francesco Bronzino (Rutgers University), Yang Chen (Duke University), Dipankar Raychaudhuri, Ivan Seskar, Chao Han (Rutgers University) and Xiaowei Yang (Duke University).
(Long paper with video demo)

Experimentation of geometric information routing on content locators

Sahel Sahhaf, Dimitri Papadimitriou, Wouter Tavernier, Didier Colle and Mario Pickavet (Ghent University)

(Long paper with demo)

An OpenFlow-based Prototype of SDN-oriented Stateful Hardware Firewalls

Jacob Collings and Jun Liu (University of North Dakota) (Short paper demo)

GENI Cinema: A SDN-Assisted Scalable Live Video Streaming Service

Qing Wang, Ke Xu, Ryan IZard, Benton Kribbs, Joseph Porter, Kuang-Ching Wang (Clemson University), Aditya Prakash and Parmesh Ramanathan (University of Wisconsin, Madison)
(Work-in-progress paper with demo)

12:10 - 13:30

Lunch

Room: Oak Forest A

13:30 - 15:00

Session II (3 long papers, two work-in-progress)

Room: Pin Oak

Chair: Bing Wang (University of Connecticut)

Experience in Implementing and Deploying a Non-IP Routing Protocol VIRO in GENI

Braulio Dumba, Guobao Sun, Hesham Mekky and Zhi-Li Zhang (University of Minnesota)
(Long paper with demo)

Domain Science Applications on GENI: Presentation and Demo

Paul Ruth and Anirban Mandal (Renaissance Computing Institute, University of North Carolina at Chapel Hill)
(Work-in-progress paper with demo)

Experiments on Networking Requirements of Hadoop

Deniz Gurkan, Gandhimathi Velusamy and Abdul Navaz, (University of Houston)
(Work-in-progress paper with demo)

Designing A GENI Experimenter Tool To Support the ChoiceNet Internet Architecture

David Brown, Onur Ascigil, Hussamuddin Nasir, Charles Carpenter, James Griffioen and Kenneth Calvert (University of Kentucky)
(Long paper with demo)

Omnibond Demo

15:00 - 15:30

Break

Room: Esplanade

15:30 - 16:30

Panel

Room: Pin Oak

Chair: Niky Riga (BBN Technologies)

Panelists:

Jeff Chase (Duke University)

Wenye Wang (North Carolina State University)

Paul Ruth (Renaissance Computing Institute, University of North Carolina at Chapel Hill)

Thanasis Korakis (Polytechnic Institute of New York University)

16:30 – 16:40

Wrapup

Room: Pin Oak

Kaiqi Xiong (Rochester Institute of Technology) and Thanasis Korakis (Polytechnic Institute of New York University)

PHD Forum Technical Program

Friday, October 24

08:45 – 9:00

Welcome and Best Paper Award

Room: Willow Oak

Jay Aikat (UNC-Chapel Hill) and Lina Battestilli (NC State)

09:00 - 10:00

Keynote

Room: Willow Oak

Theo Benson (Duke University): “Large scale systems research from a small pond”

10:00 - 10:30

Break

Room: Esplanade

10:30 - 12:00

Session I

Room: Willow Oak

Software Switch Performance Factors in Network Virtualization Environment

Yimeng Zhao (Telecom Paristech, France); Luigi Iannone (Telecom ParisTech, France); Michel Riguidel (Telecom Paristech, France)

Optimizing Mobile Prefetching by Leveraging Usage Patterns and Social Information

Christian Koch (TU Darmstadt, Germany); David Hausheer (TU Darmstadt, Germany)

Multi-path Solutions to Improve Network Performance

Behnaz Arzani (University of Pennsylvania, USA)

Obstacle Shadowing Influences in VANET Safety

Scott Carpenter (North Carolina State University, USA)

Towards Resource-Efficient Application-Controlled Software Defined Networks

Jeremias Blendin (TU Darmstadt, Germany); David Hausheer (TU Darmstadt, Germany)

Brokerage Service in Cloud Federation

Mohammad Aazam (Kyung Hee University, Korea)

A Decentralized System for Privacy-Preserving Context Exchange: Facilitating a Better Work-Life

Balance

Rahul Chini Dwarakanath (Technische Universität Darmstadt, Germany); Ralf Steinmetz (Technische Universität Darmstadt, Germany)

IP45: Architecture, Design and Implementation

Tomas Podermanski (Brno University of Technology, Czech Republic); Miroslav Sveda (Brno University of Technology, Czech Republic)

On the Variation in Web Page Download Traffic across Different Client Types

Sean Sanders (University of North Carolina, USA); Jasleen Kaur (University of North Carolina at Chapel Hill, USA)

A Study on a Routing-based Mobility Management Architecture for IoT Devices

Masanori Ishino (Osaka University, Japan); Yuki Koizumi (Osaka University, Japan); Toru Hasegawa (Osaka University, Japan)

Challenges with Transition and User Accounting in Next Generation Networks

Matej Gregr (Brno University of Technology, Czech Republic); Miroslav Sveda (Brno University of Technology, Czech Republic)

12:00 - 13:30

Lunch

Room: Oak Forest A

13:30 - 15:00

Panel and Group discussion – Current Challenges and Future Directions in Networking

Room: Willow Oak

The panel will discuss challenges and future directions for networking and networking research. The participants will present their views and then open the floor to discussion.

Moderator: Savera Tanwir (North Carolina State University)

Panelists:

- Kenneth L. Calvert (University of Kentucky)

- Xiaoming Fu (Georg-August-University of Goettingen)
- Steven Hunter (IBM Fellow)
- Kevin Jeffay (UNC-Chapel Hill)

15:00 - 15:30

Break

Room: Esplanade

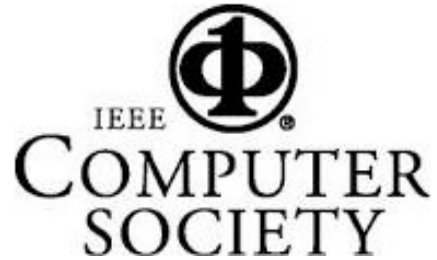
15:30 – 15:40

Wrap-up

Room: Willow Oak

Jay Aikat (UNC-Chapel Hill) and Lina Battestilli (NC State)

Big Thanks To Our Sponsors:



(sponsor of CNERT)