

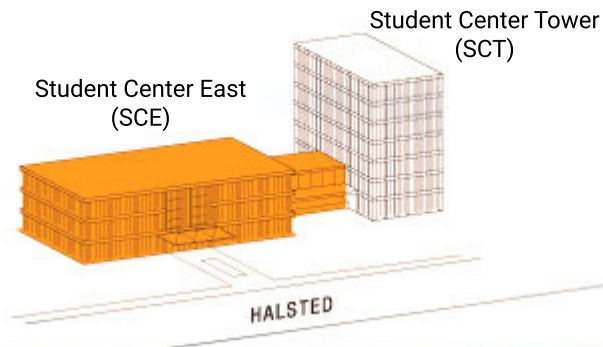


IEEE ICNP 2019 Technical Program

Agenda

	Workshops	Main Conference		
	Monday (Oct. 7)	Tuesday (Oct. 8)	Wednesday (Oct. 9)	Thursday (Oct. 10)
	Registration 7:30AM - 5:00PM	Registration 8:00AM - 5:00PM	Registration 8:00AM - 5:00PM	Registration 8:00AM - 5:00PM
7:30AM				
8:00AM	Breakfast 7:30AM - 9:00AM	Breakfast 8:00AM - 9:00AM	Breakfast 8:00AM - 9:00AM	Breakfast 8:00AM - 9:00AM
8:30AM				
9:00AM	Workshops	Opening & Keynote 9:00AM - 10:15AM	TS 5: WLAN 9:00AM - 10:15AM	TS 9: Security & Privacy 9:00AM - 10:15AM
9:30AM				
10:00AM		Tea/Coffee Break 10:15AM - 10:45AM	Tea/Coffee Break 10:15AM - 10:45AM	Tea/Coffee Break 10:15AM - 10:45AM
10:30AM				
11:00AM		TS 1: Applications 10:45AM - 12:00PM	TS 6: IoT & WLAN 10:45AM - 12:00PM	TS 10: Control & Data Plane 10:45AM - 12:00PM
11:30AM				
12:00PM	Lunch 12:00PM - 1:30PM	Lunch 12:00PM - 1:30PM	Lunch 12:00PM - 1:30PM	Lunch 12:00PM - 1:30PM
12:30PM				
1:00PM				
1:30PM	Workshops	TS 2: SDN 1:30PM - 3:10PM	TS 7: RFID 1:30PM - 2:45PM	TS 11: Network Protocols 1:30PM - 2:45PM
2:00PM				
2:30PM		Tea/Coffee Break 2:45PM - 3:15PM	Tea/Coffee Break 2:45PM - 3:15PM	Tea/Coffee Break 2:45PM - 3:15PM
3:00PM				
3:30PM		TS 3: NFV 3:40PM - 5:00PM	TS 8: Data Centers 3:15PM - 4:55PM	TS 12: TE & Content 3:15PM - 4:30PM
4:00PM				
4:30PM				TS 13: Measurements 4:30PM - 5:45PM
5:00PM	TS 4: IoT 5:00PM - 6:00PM			
5:30PM				Closing 5:45PM - 6:00PM
6:00PM				
6:30PM	Reception Demo/Poster sessions 6:00PM - 8:30PM			
7:00PM				
7:30PM				
8:00PM			Cruise/Banquet 6:30PM - 9:30PM	
8:30PM				
9:00PM				

Location



Monday, October 7, 2019

Breakfast, Lunch, Coffee Breaks
– SCE Cardinal Room

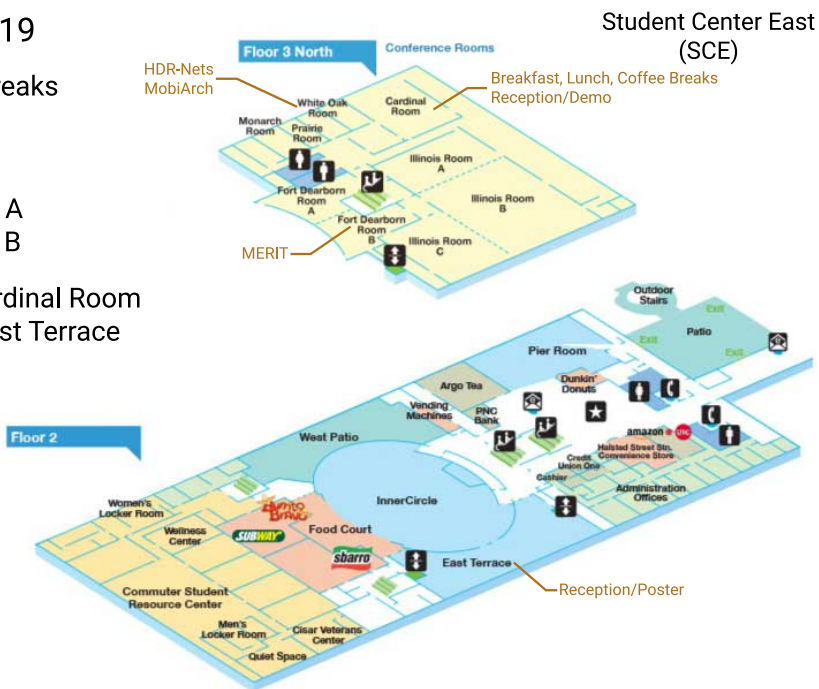
Merit – SCE Dearborn B

HDR-Nets – SCE White Oak A

MobiArch – SCE White Oak B

Reception/Demo – SCE Cardinal Room

Reception/Poster – SCE East Terrace



Tuesday, October 8, 2019 –

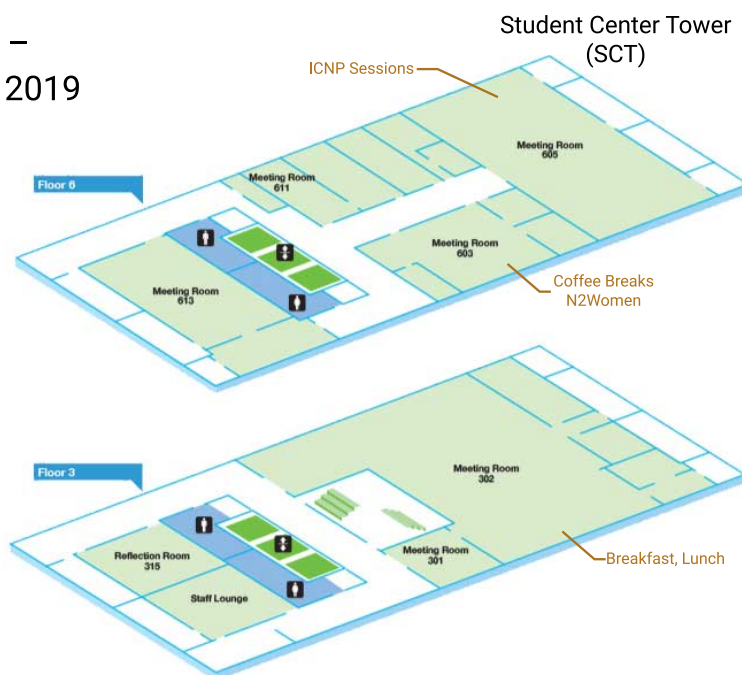
Thursday, October 10, 2019

Breakfast, Lunch – SCT 302

ICNP Sessions – SCT 605

Coffee Breaks – SCT 603

N2Women – SCT 603



Monday, October 7, 2019

07:30-09:00 Breakfast (coffee and pastries)

08:30-18:00 Workshops

MERIT 2019 (<https://icnp19.cs.ucr.edu/merit.html>)

Midscale Education and Research Infrastructure and Tools Community Event

HDR-Nets 2019 (<https://aiops.org/icnpworkshop.html>)

Workshop on Harnessing the Data Revolution in Networking

MobiArch 2019 (<http://mobinets.org/mobiarch19/>)

Workshop on Mobility in the Evolving Internet Architecture

18:00-20:30 Reception Night. Posters and demos.

Posters

Coordinated Communications for Next-Generation Networks

Kiran Makhijani, Hamed Yousefi (Futurewei Technologies); K. K. Ramakrishnan (University of California, Riverside); Richard Li (Futurewei Technologies)

A Heterogeneous Parallel Packet Processing Architecture for NFV Acceleration

Jinshu Su (National University of Defense Technology, China, National Key Laboratory of Parallel and Distributed Processing, China); Biao Han, Gaofeng Lv, Tao Li, Zhigang Sun (National University of Defense Technology, China)

Privacy-Preserving Remote Knowledge System

Markus Dahlmanns, Chris Dax, Roman Matzutt, Jan Pennekamp, Jens Hiller, Klaus Wehrle (RWTH Aachen University, Germany)

Multipathing Traffic to Reduce Entry Node Exposure in Onion Routing

Jan Pennekamp, Jens Hiller, Sebastian Reuter (RWTH Aachen University, Germany); Wladimir De la Cadena, Asya Mitseva (University of Luxembourg, Luxembourg); Martin Henze (Cyber Analysis & Defense, Fraunhofer FKIE, Bonn-Bad Godesberg, Germany); Thomas Engely (University of Luxembourg, Luxembourg), Klaus Wehrle (RWTH Aachen University, Germany), Andriy Panchenko (Brandenburg University of Technology, Germany)

Load Migration Protocol for SDN Controllers

Mohammad Amin Beirut, Yashar Ganjali (University of Toronto)

CeforeSim: Cefore Compliant NS-3-Based Network Simulator

Yusaku Hayamizu, Kazuhisa Matsuzono, Hitoshi Asaeda (NICT, Japan)

Intentionality-related Deep Learning Method in Web Prefetching

Wenbo Zou, Jiwoong Won, Jemin Ahn, Kyungtae Kang (Hanyang University, Republic of Korea)

Physical-layer Cross-Technology Communication with Narrow-Band Decoding

Lingang Li, Yongrui Chen (University of Chinese Academy of Sciences, China); Zhijun Li (Harbin Institute of Technology, China)

CoRE: Non-Linear 3D Sampling for Robust 360° Video Streaming

Mijanur R. Palash, Voicu Popescu, Amit Sheoran, Sonia Fahmy (Purdue University)

Migration Scheduling in Distributed SDN Controllers

Mohammad Amin Beirut, Yashar Ganjali (University of Toronto)

Hierarchical Congestion Control (HCC): Cooperation of Uncorrelated Flows for Better Fairness and Throughput

Shiva Ketabi, Yashar Ganjali (University of Toronto)

On Verification of Remote Computing on Potentially Untrusted Nodes

Hiroki Masuda, Kentaro Kita, Yuki Koizumi, Toru Hasegawa (Osaka University)

Container Orchestration by Kubernetes for RDMA Networking

Coleman Link, Jesse Sarran, Garegin Grigoryan, Minseok Kwon, M. Mustafa Rafique, Warren R. Carithers (Rochester Institute of Technology)

A Study on Effective Congestion Control to Retrieve Distributed Data in ICN

Naoki Moriyama (University of Kitakyushu, Japan); Yusuke Ito (Tokyo University of Science, Japan); Hiroyuki Koga (University of Kitakyushu, Japan)

Demos

Towards Human-Robot Collaboration: An Industry 4.0 VR Platform with Clouds Under the Hood

Bálint György Nagy (MTA-BME Network Softwarization Research Group); János Dóka (MTA-BME Network Softwarization Research Group, Budapest Univ. of Technology and

Economics); Sándor Rácz, Géza Szabó (Ericsson Research); István Pelle (MTA-BME Network Softwarization Research Group); János Czentye (Budapest Univ. of Technology and Economics); László Toka (MTA-BME Network Softwarization Research Group); Balázs Sonkoly (MTA-BME Network Softwarization Research Group, Budapest Univ. of Technology and Economics)

LASK: A Distributed Service Discovery Platform on Edge Computing Environments

Yuuichi Teranishi, Takashi Kimata, Hiroaki Yamanaka, Eiji Kawai, Hiroaki Harai (NICT, Japan)

ReDiCom: Resilient Communication for First Responders in Disaster Management

Jiachen Chen (WINLAB, Rutgers University); Yuxuan Xing (University of Illinois at Chicago); K.K. Ramakrishnan, Mohammad Jahanian (University of California, Riverside); Hulya Seferoglu (University of Illinois at Chicago); Murat Yuksel (University of Central Florida)

Measuring Distance Traveled by an Object using WiFi-CSI and IMU Fusion

Raghav Hampapur Venkatnarayan, Muhammad Shahzad (North Carolina State University)

Tuesday, October 8, 2019

08:00-09:00 Breakfast (coffee and pastries)

09:00-10:15 Opening and Keynote

Keynote: How We Might Get Humans out of the Way

Professor Nick McKeown, Electrical Engineering and Computer Science, Stanford University

Abstract:

Now that network operators have taken charge of their network control planes and are in the process of taking charge of their forwarding planes, the network is becoming a top-down programmable platform for the first time. The consequences will be profound. In this talk I will describe some of the consequences and explain why I think networks in 10 years will be very different from today.

Speaker bio:

Nick McKeown has been a Professor of Electrical Engineering and Computer Science at Stanford University since 1995. In 2005 he started the Clean Slate Program at Stanford, which with Martin Casado and Scott Shenker led to "Software Defined Networking". He co-founded Nicira (now part of VMware), Abrizio and Nemo ("Network Memory", now part of Cisco), as well as ONF, ON.Lab and P4.org. In 2013, he also co-founded Barefoot Networks, which was recently acquired by Intel. His current passion is to move the network data-plane from fixed-function hardware up and into software where it belongs. He hopes this will foster much faster innovation in networking, and finally hand over the keys to those who own and operate networks, to customize them to best suit their needs.

Nick is a member of the US National Academy of Engineering (NAE), the American Academy of Arts and Sciences, and a Fellow of the Royal Academy of Engineering (UK). He received the British Computer Society Lovelace Medal (2005), the IEEE Kobayashi Computer and Communications Award (2009), the ACM Sigcomm Lifetime Achievement Award (2012), and an Honorary Doctorate from ETH (Zurich, 2014).

10:15-10:45 Coffee Break

10:45-12:00 Session 1: Applications

Microservice Fingerprinting and Classification using Machine Learning (Long paper)
Hyunseok Chang, Murali Kodialam, T.V. Lakshman, Sarit Mukherjee (Nokia Bell Labs)

Graph-based Namespaces and Load Sharing for Efficient Information Dissemination in Disasters (Long paper)

Mohammad Jahanian (University of California, Riverside); Jiachen Chen (WINLAB, Rutgers University); K. K. Ramakrishnan (University of California, Riverside)

Optimal Strategies for Live Video Streaming in the Low-latency Regime (Short paper)
Liyang Sun, Tongyu Zong, Yong Liu, Yao Wang (New York University); Haihong Zhu (Futurewei Technologies)

12:00-13:30 Lunch Break

12:00-13:30 N2Women Event

You are cordially invited to attend the N2Women meeting at ICNP 2019!

We are honored to have a panel discussion and networking event with three distinguished panelists from academia and industry. Panelists will deliver a short presentation on a specific topic and then have an interactive panel discussion with the attendees. The event will also include a networking session to allow attendees to interact and share knowledge and experience.

Our distinguished panelists are:

- *Prof. Sonia Fahmy (Professor, Purdue University)*
Topic: **Critical Skills Needed to Succeed in ICT Today**
- *Prof. Israat Haque (Assistant Professor, Dalhousie University)*
Topic: **Academic/Industry Career for Women in Science**
- *Dr. Yasaman Keshtkarjahromi (Senior Research Engineer, Seagate Technology)*
Topic: **Work/Life Balance**

Please find the flyer of the event here (N2-Women-ICNP-2019.jpg) and please RSVP here (<https://forms.gle/jmiXm1t1UUjx74c69>)

Everyone is welcome to join us!

Organized by: *Elizabeth Liri (University of California, Riverside)*

Faculty Mentor: *Prof. Lixin Gao (University of Massachusetts Amherst)*

For further information, please contact Elizabeth Liri at eliri001@ucr.edu (<mailto:eliri001@ucr.edu>)

13:30-15:10 Session 2: Software Defined Networking (SDN)

SAFE-ME: Scalable and Flexible Middlebox Policy Enforcement with Software Defined Networking (Long paper)

Gongming Zhao, Hongli Xu, Jianchun Liu (University of Science and Technology of China); Chen Qian (University of California Santa Cruz); Juncheng Ge, Liusheng Huang (University of Science and Technology of China)

Virtual Network Embedding with Path-based Latency Guarantees in Elastic Optical Networks (Long paper)

Sepehr Taeb, Nashid Shahriar, Shihabur Rahman Chowdhury (David R. Cheriton School of Computer Science, University of Waterloo); Massimo Tornatore (Politecnico di

Milano); Raouf Boutaba (David R. Cheriton School of Computer Science, University of Waterloo); Jeebak Mitra, Mahdi Hemmati (Huawei Technologies Canada Research Center)

MACS: Deep Reinforcement Learning based SDN Controller Synchronization Policy Design (Long paper)

Ziyao Zhang (Imperial College London); Liang Ma (IBM T.J. Watson Research Center); Konstantinos Poularakis (Yale University); Kin K. Leung (Imperial College London); Jeremy Tucker (UK Defence Science & Technology Lab); Ananthram Swami (US Army Research Lab)

15:10-15:40 Coffee Break

15:40-17:00 Session 3: Network Function Virtualization (NFV)

FlowShader: a Generalized Framework for GPU-accelerated VNF Flow Processing (Long paper)

Xiaodong Yi, Junjie Wang (The University of Hong Kong); Jingpu Duan (Southern University of Science and Technology); Wei Bai (Microsoft Research); Chuan Wu (The University of Hong Kong); Yongqiang Xiong (Microsoft Research); Han Dongsu (Korea Advanced Institute of Science and Technology)

Placement and Allocation of Virtual Network Functions: Multi-dimensional Case (Long paper)

Gamal Sallam (Temple University); Zizhan Zheng (Tulane University); Bo Ji (Temple University)

Re-Architecting the Packet Core and Control Plane for Future Cellular Networks (Short paper)

Ali Mohammadkhan, K.K. Ramakrishnan (University of California, Riverside)

17:00-18:00 Session 4: Internet of Things (IoT)

LoRaBee: Cross-Technology Communication from LoRa to ZigBee via Payload Encoding (Long paper)

Junyang Shi, Di Mu, Mo Sha (State University of New York at Binghamton)

Forward the Collision Decomposition in ZigBee (Long paper)

Yifeng Cao, Zhe Wang, Linghe Kong, Guihai Chen, Jiadi Yu (Shanghai Jiao Tong University); Shaojie Tang (University of Texas at Dallas); Yingying Chen (Rutgers University)

Wednesday, October 9, 2019

08:00-09:00 Breakfast (coffee and pastries)

09:00-10:15 Session 5: Wireless Local Area Networks (WLAN)

BDAC: A Behavior-aware Dynamic Adaptive Configuration on DHCP in Wireless LANs (Long paper)

Congcong Miao, Jilong Wang, Tianying Ji, Hui Wang, Chao Xu, Fenghua Li, Fengyuan Ren (Tsinghua University)

BeaconRider: Opportunistic Sharing of Beacon Air-Time in Densely Deployed WLANs (Long paper)

Hyunjoong Lee, Jungjun Kim (Department of Electrical and Computer Engineering, Seoul National University, INMC, Seoul, Korea); Changhee Joo (School of Electrical and Computer Engineering, UNIST, Ulsan, Korea); Saewoong Bahk (Department of Electrical and Computer Engineering, Seoul National University, INMC, Seoul, Korea)

A (Near) Zero-cost and Universal Method to Combat Multipaths for RFID Sensing (Short paper)

Ge Wang (Xi'an Jiaotong University); Chen Qian (University of California, Santa Cruz); Kaiyan Cui, Han Ding (Xi'an Jiaotong University); Haofan Cai (University of California, Santa Cruz); Wei Xi (Xi'an Jiaotong University); Jinsong Han (Zhejiang University); Jizhong Zhao (Xi'an Jiaotong University)

10:15-10:45 Coffee Break

10:45-12:00 Session 6: Internet of Things and Wireless Local Area Networks (IoT & WLAN)

mLoRa: A Multi-Packet Reception Protocol for LoRa Communications (Long paper)

Xiong Wang, Linghe Kong (Shanghai Jiao Tong University); Liang He (University of Colorado Denver); Guihai Chen (Shanghai Jiao Tong University)

Removed due to no show

Achieving Universal Low-Power Wide-Area Networks on Existing Wireless Devices

(Long paper)

Zhijun Li (Harbin Institute of Technology); Yongrui Chen (University of Chinese Academy of Sciences)

12:00-13:30 Lunch Break

13:30-14:45 Session 7: Radio-Frequency Identification (RFID)

When Tags 'Read' Each Other: Enabling Low-cost and Convenient Tag Mutual Identification (Long paper)

Haofan Cai (University of California Santa Cruz); Ge Wang (Xi'an Jiaotong University); Xiaofeng Shi (University of California Santa Cruz); Junjie Xie (National University of Defense Technology); Minmei Wang, Chen Qian (University of California Santa Cruz)

TagAttention: Mobile Object Tracing without Object Appearance Information by Vision-RFID Fusion (Long paper)

Xiaofeng Shi, Minmei Wang (University of California, Santa Cruz); Ge Wang (Xi'an Jiaotong University); Baiwen Huang, Haofan Cai (University of California, Santa Cruz); Junjie Xie (National University of Defense Technology); Chen Qian (University of California, Santa Cruz)

14:45-15:15 Coffee Break

15:15-16:55 Session 8: Data Centers

Congestion Control for Cross-Datacenter Networks (Long paper)

Gaoxiong Zeng (HKUST); Wei Bai (HKUST and Microsoft); Ge Chen, Kai Chen (HKUST); Dongsu Han (KAIST); Yibo Zhu (ByteDance); Lei Cui (Huawei)

SQR: In-network Packet Loss Recovery from Link Failures for Highly Reliable Datacenter Networks (Long paper)

Ting Qu (National University of Defense Technology); Raj Joshi, Mun Choon Chan, Ben Leong (National University of Singapore); Deke Guo, Zhong Liu (National University of Defense Technology)

AG: Adaptive Switching Granularity for Load Balancing with Asymmetric Topology in Data Center Network (Long paper)

Jingling Liu, Jiawei Huang, Weihe Li, Jianxin Wang (School of Computer Science and Engineering, Central South University)

18:30-21:30 Banquet

Cruise Mystic Blue along lake Michigan

All guests should bring a photo ID to the banquet.

Thursday, October 10, 2019

08:00-09:00 Breakfast (coffee and pastries)

09:00-10:15 Session 9: Security & Privacy

Tailoring Onion Routing to the Internet of Things: Security and Privacy in Untrusted Environments (Long paper)

Jens Hiller, Jan Pennekamp, Markus Dahlmanns (RWTH Aachen University); Martin Henze (Fraunhofer FKIE); Andriy Panchenko (Brandenburg University of Technology); Klaus Wehrle (RWTH Aachen University)

Rethinking Encrypted Traffic Classification: A Multi-Attribute Associated Fingerprint Approach (Long paper)

Yige Chen, Tianning Zang, Yongzheng Zhang, Yuan Zhou, Yipeng Wang (Institute of Information Engineering, Chinese Academy of Sciences)

RobustPay: Robust Payment Routing Protocol in Blockchain-based Payment Channel Networks (Short paper)

Yuhui Zhang, Dejun Yang (Colorado School of Mines)

10:15-10:45 Coffee Break

10:45-12:00 Session 10: Control and Data Plane

Re-designing Compact-structure based Forwarding for Programmable Networks (Long paper)

Shouqian Shi, Chen Qian, Minmei Wang (University of California, Santa Cruz)

NetHCF: Enabling Line-rate and Adaptive Spoofed IP Traffic Filtering (Long paper)

Guanyu Li, Menghao Zhang, Chang Liu, Xiao Kong (Tsinghua University); Ang Chen (Rice University); Guofei Gu (Texas A&M University); Haixin Duan, Mingwei Xu (Tsinghua University)

Busoni: Policy Composition and Northbound Interface for IPv6 Segment Routing Networks (Short paper)

Osamah Barakat (University of Goettingen); Pier Luigi Ventre, Stefano Salsano (University of Rome Tor Vergata); Xiaoming Fu (University of Goettingen)

12:00-13:30 Lunch Break

13:30-14:45 Session 11: Network Protocols

A Precise and Expressive Lattice-theoretical Framework for Efficient Network Verification (Long paper)

Authors: Alex Horn (Apple Inc.); Ali Kheradmand (University of Illinois at Urbana-Champaign); Mukul R. Prasad (Fujitsu Laboratories of America, Inc.)

Towards Automated Network Management: Learning the Optimal Protocol Selection for Network Flows (Short paper)

Xiaoxi Zhang (Carnegie Mellon University); Siqi Chen, Youngbin Im (University of Colorado Boulder); Maria Gorlatova (Duke University); Sangtae Ha (University of Colorado Boulder); Carlee Joe-Wong (Carnegie Mellon University)

The Case for Pluginised Routing Protocols (Long paper)

Thomas Wirtgen, Cyril Dénos, Quentin De Coninck, Mathieu Jadin, Olivier Bonaventure (UCLouvain)

14:45-15:15 Coffee Break

15:15-16:30 Session 12: Traffic Engineering and Content Delivery

Perseverance-Aware Traffic Engineering in Rate-Adaptive Networks with Reconfiguration Delay (Long paper)

Shih-Hao Tseng (California Institute of Technology)

Local Fast Rerouting with Low Congestion: A Randomized Approach (Long paper)

Gregor Bankhamer, Robert Elsässer (Uni Salzburg, Austria); Stefan Schmid (University of Vienna, Austria)

Unison: Enabling Content Provider/ISP Collaboration using a vSwitch Abstraction

(Long paper)

Yimeng Zhao, Ahmed Saeed, Mostafa Ammar, Ellen Zegura (Georgia Institute of Technology)

Unveil the Hidden Presence: Characterizing the Backend Interface of Content Delivery Networks (Long paper)

Lin Jin (University of Delaware); Shuai Hao (CAIDA/UC San Diego); Haining Wang, Chase Cotton (University of Delaware)

16:30-17:45 Session 13: Network Measurements

Robust Distributed Monitoring of Traffic Flows (Long paper)

Vitalii Demianiuk, Sergey Gorinsky (IMDEA Networks Institute); Sergey Nikolenko (Steklov Institute of Mathematics at St. Petersburg); Kirill Kogan (IMDEA Networks Institute)

A Linguistics-based Stacking Approach to Disposable Domains Detection (Short paper)

Authors: Yuwei Zeng (University of Chinese Academy of Sciences); Yongzheng Zhang, Tianning Zang (Institute of Information Engineering, Chinese Academy of Sciences); Xunxun Chen (CNCERT/CC); Yipeng Wang (Institute of Information Engineering, Chinese Academy of Sciences)

17:45-18:00 Closing

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