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Program

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Tuesday, April 12

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Room: Marina

Chair: Wei Gao (University of Tennessee, USA)

Scheduling for Cloud-Based Computing Systems to Support Soft Real-Time Applications 757

Yuhuan Du (University of Texas at Austin, USA); Gustavo de Veciana (The University of Texas at Austin, USA)

Symbiosis: Network-Aware Task Scheduling in Data-Parallel Frameworks 766

Jingjie Jiang, Shiyao Ma and Bo Li (Hong Kong University of Science and Technology, Hong Kong); Baochun Li (University of Toronto, Canada)

Scheduling with Multi-level Data Locality: Throughput and Heavy-traffic Optimality 775

Qiaomin Xie (University of Illinois at Urbana-Champaign, USA); Ali Yekkehkhany (University of Illinois Urbana-Champaign, USA); Yi Lu (University of Illinois at Urbana-Champaign, USA)

Scheduling Jobs with Non-uniform Demands on Multiple Servers without Interruption 784

Sungjin Im (University of California, Merced, USA); Mina Naghshnejad (UC Merced, USA); Mukesh Singhal (University of California at Merced, USA)

Wednesday, April 13

Wednesday, April 13, 08:30 - 10:00

Wed-A.1: Software Defined Networks I

Room: Grand Ballroom B

Chair: Ting He (IBM Research, USA)

Software Defined Networks: It's About Time 793

Tal Mizrahi (Technion); Yoram Moses (Technion, Israel)

FLIP the (Flow) Table: Fast Lightweight Policy-preserving SDN Updates 802

Stefano Vissicchio (Université Catholique de Louvain, Belgium); Luca Cittadini (Roma Tre University, Italy)

Cupid: Congestion-free Consistent Data Plane Update In Software Defined Networks 811

Wen Wang and Wenbo He (McGill University, Canada); Jinshu Su (National University of Defence Technology, P.R. China); YiXin Chen (McGill University, Canada)

Compiling Packet Forwarding Rules for Switch Pipelined Architecture 820

Hamadi Salaheddine (UQAM, Canada); Khalil Blaiech (Université du Québec à Montreal, Canada); Petko Valtchev (UQAM & University of Montreal, Canada); Radu State (University of Luxembourg, Luxembourg); Cherkaoui Omar (University of Quebec in Montreal, Canada)

Wed-A.2: Energy Awareness for Wireless Networks

Room: Grand Ballroom C

Chair: Song Chong (KAIST, Korea)

***BattTracker: Enabling Energy Awareness for Smartphone Using Li-ion Battery Characteristics* 829**

Jonghoe Koo and Kitaek Lee (Seoul National University, Korea); Wonbo Lee (Samsung Electronics, Korea); Yong Seok Park (Samsung electronics, Korea); Sunghyun Choi (Seoul National University, Korea)

***DAFEE: A Decomposed Approach for Energy Efficient Networking in Multi-Radio Multi-Channel Wireless Networks* 838**

Lu Liu (Illinois Institute of Technology, USA); Xianghui Cao (Southeast University, P.R. China); Wenlong Shen, Yu Cheng and Lin X. Cai (Illinois Institute of Technology, USA)

***From Rateless to Sampleless: Wi-Fi Connectivity Made Energy Efficient* 847**

Wei Wang and Yingjie Chen (Hong Kong University of Science and Technology, Hong Kong); Lu Wang (Shenzhen University, P.R. China); Qian Zhang (Hong Kong University of Science and Technology, Hong Kong)

***Fiber Optic vs. Wireless Sensors in Energy-Efficient Integrated FiWi Smart Grid Networks: An Energy-Delay and TCO Comparison* 856**

Dung Pham Van (Optical Networks Lab, KTH Royal University of Technology, Sweden); Bhaskar Prasad Rimal and Martin Maier (Institut National de la Recherche Scientifique (INRS), Canada)

Wed-A.3: Multimedia Networking

Room: Bayview B

***QoE Matters More Than QoS: Why People Stop Watching Cat Videos* 865**

Hyunwoo Nam, Kyung Hwa Kim and Henning Schulzrinne (Columbia University, USA)

***Caching and Operator Cooperation Policies for Layered Video Content Delivery* 874**

Konstantinos Poularakis and George Iosifidis (Yale University, USA); Antonios Argyriou (University of Thessaly, Greece); Iordanis Koutsopoulos (Athens University of Economics and Business, Greece); Leandros Tassioulas (Yale University, USA)

***BOLA: Near-Optimal Bitrate Adaptation for Online Videos* 883**

Kevin Spiteri (University of Massachusetts, Amherst, USA); Rahul Urgaonkar (Amazon, USA); Ramesh K Sitaraman (University of Massachusetts, Amherst & Akamai Technologies, USA)

***CompoundEyes: Near-duplicate Detection in Large Scale Online Video Systems in the Cloud* 892**

YiXin Chen and Wenbo He (McGill University, Canada); Yu Hua (Huazhong University of Science and Technology, P.R. China); Wen Wang (McGill University, Canada)

Wed-A.4: Resource Allocation I

Room: Seacliff C+D

Chair: Zhangyu Guan (Northeastern University, USA)

***Online Multi-Resource Allocation for Deadline Sensitive Jobs with Partial Values in the Cloud* 901**

Zizhan Zheng (University of California, Davis, USA); Ness B. Shroff (The Ohio State University, USA)

***Efficiency and Optimality of Largest Deficit First Prioritization: Resource Allocation for Real-Time Applications* 910**

Yuhuan Du (University of Texas at Austin, USA); Gustavo de Veciana (The University of Texas at Austin, USA)

***On the Modeling and Optimization of Short-Term Performance for Real-Time Wireless Networks* 919**

I-Hong Hou (Texas A&M University, USA)

Task Allocation for Distributed Stream Processing 928

Raphael Eidenbenz and Thomas Locher (ABB Corporate Research, Switzerland)

Wed-A.5: Connected Cars

Room: Bayview A

Chair: Yingying Chen (Stevens Institute of Technology, USA)

How Cars Talk Louder, Clearer and Fairer: Optimizing the Communication Performance of Connected Vehicles via Online Synchronous Control 937

Xi Chen (McGill University, Canada); Linghe Kong (Shanghai Jiao Tong University, P.R. China); Xue Liu (McGill University, Canada); Lei Rao (Huawei Technologies, USA); Fan Bai (General Motors, USA); Qiao Xiang (McGill University, Canada)

Multi-source Variable-rate Sampled Signal Reconstructions in Vehicular CPS 946

Andrew Fox and B. V. K. Vijaya Kumar (Carnegie Mellon University, USA); Fan Bai (General Motors, USA)

L 3: Sensing Driving Conditions for Vehicle Lane-Level Localization on Highways 955

Zhichen Wu and Jianda Li (Shanghai Jiaotong University, P.R. China); Jiadi Yu, Yanmin Zhu, Xue Guangtao and Minglu Li (Shanghai Jiao Tong University, P.R. China)

Detecting Driver Phone Calls in a Moving Vehicle Based on Voice Features 964

Tianyi Song (GWU, USA); Xiuzhen Cheng (George Washington Univ, USA); Hongjuan Li (The George Washington University, USA); Jiguo Yu (Qufu Normal University, P.R. China); Shengling Wang (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Rongfang Bie (Beijing Normal University, P.R. China)

Wed-A.6: Network Economics

Room: Seacliff A

Chair: Jianwei Huang (The Chinese University of Hong Kong, Hong Kong)

An Efficient Auction Mechanism for Service Chains in The NFV Market 973

Sijia Gu and Zongpeng Li (University of Calgary, Canada); Chuan Wu (The University of Hong Kong, Hong Kong); Chuanhe Huang (Wuhan University, P.R. China)

When group-buying meets cloud computing 982

Juntao Wang (Shanghai Jiaotong University, P.R. China); Xun Xiao (European Research Center & Huawei Technologies, Germany); Jianping Wang (City University of Hong Kong, Hong Kong); Kejie Lu (University of Puerto Rico at Mayaguez, Puerto Rico); Xiaotie Deng (Shanghai Jiaotong University, P.R. China); Ashwin A Gumaste (Indian Institute of Technology, Bombay, India)

An Online Mechanism for Dynamic Virtual Cluster Provisioning in Geo-Distributed Clouds 991

WeiJie Shi and Chuan Wu (The University of Hong Kong, Hong Kong); Zongpeng Li (University of Calgary, Canada)

The Impact of Unlicensed Access on Small-Cell Resource Allocation 1000

Cheng Chen, Randall A Berry and Michael Honig (Northwestern University, USA); Vijay Subramanian (University of Michigan, USA)

Wed-A.7: Caching

Room: Seacliff B

Chair: Jussi Kangasharju (University of Helsinki, Finland)

Understanding Sharded Caching Systems 1009

Lorenzo Saino, Ioannis Psaras and George Pavlou (University College London, United Kingdom)

Cache increases the capacity of wireless networks 1018

Li Qiu and Guohong Cao (The Pennsylvania State University, USA)

An $\mathcal{O}(1)$ -Competitive Online Caching Algorithm for Content Centric Networking 1027

Ammar Gharaibeh and Abdallah A Khreishah (New Jersey Institute of Technology, USA); Issa M Khalil (Qatar Computing Research Institute & Qatar Foundation, Qatar)

A Utility Optimization Approach to Network Cache Design 1036

Mostafa Dehghan (University of Massachusetts Amherst, USA); Laurent Massoulié (Microsoft Research - INRIA Joint Center, Sweden); Don Towsley (University of Massachusetts at Amherst, USA); Daniel Menasché (Federal University of Rio de Janeiro, Brazil); Y. C. Tay (National University of Singapore, Singapore)

Wed-A.8: Jamming

Room: Marina

Chair: Qian Wang (Wuhan University, P.R. China)

Friendly Channel-Oblivious Jamming with Error Amplification for Wireless Networks 1045

Zhenghao Zhang and Avishek Mukherjee (Florida State University, USA)

Price-based Friendly Jamming in a MISO Interference Wiretap Channel 1054

Peyman Siyari and Marwan Krunz (University of Arizona, USA); Diep N. Nguyen (University of Technology Sydney, Australia)

Divide-and-Conquer Based Cooperative Jamming: Addressing Multiple Eavesdroppers in Close Proximity 1063

Zhihong Liu and Jiajia Liu (Xidian University, P.R. China); Nei Kato (Tohoku University, Japan); Jian-feng Ma and Qiping Huang (Xidian University, P.R. China)

Jamming Attack on In-band Full-duplex Communications: Detection and Countermeasures 1072

Manjesh K Hanawal (IIT Bombay, India); Diep N. Nguyen (University of Technology Sydney, Australia); Marwan Krunz (University of Arizona, USA)

Wednesday, April 13, 10:30 - 12:00

Wed-B.1: Wi-Fi

Room: Grand Ballroom C

Chair: Daniel Menasché (Federal University of Rio de Janeiro, Brazil)

Augmenting Wide-band 802.11 Transmissions via Unequal Packet Bit Protection 1081

Yaxiong Xie (Nanyang Technological University, Singapore); Zhenjiang Li (City University of Hong Kong, Hong Kong); Mo Li (Nanyang Technological University, Singapore); Kyle Jamieson (Princeton University & University College London, USA)

Just-in-time WLANs: On-demand Interference-managed WLAN Infrastructures 1090

Kimin Lee (KAIST, Korea); Yeonkeun Kim (KAIST); Seokhyun Kim, Jinwoo Shin, Seungwon Shin and Song Chong (KAIST, Korea)

Tuning by Turning: Enabling Phased Array Signal Processing for WiFi with Inertial Sensors 1099

Kun Qian, Chenshu Wu and Zheng Yang (Tsinghua University, P.R. China); Zimu Zhou (ETH Zurich, Switzerland); Xu Wang (Tsinghua University, P.R. China); Yunhao Liu (Tsinghua University & The Hong Kong University of Science and Technology, P.R. China)

A Walk on the Client Side: Monitoring Enterprise Wifi Networks Using Smartphone Channel Scans 1108

Jinghao Shi (University at Buffalo, USA); Lei Meng (University of Notre Dame, USA); Dimitrios Koutsonikolas (University at Buffalo, SUNY, USA); Chunming Qiao (University at Buffalo, USA); Aaron D Striegel (University of Notre Dame, USA); Geoffrey Challen (University at Buffalo, USA)

Wed-B.2: Theory for Sensor Networks

Room: Bayview B

Chair: Lidong Wu (UT Tyler, USA)

Multi-View Coding and Routing of Local Features in Visual Sensor Networks 1117

Alessandro E. C. Redondi, Luca Baroffio, Matteo Cesana and Marco Tagliasacchi (Politecnico di Milano, Italy)

Performance-Guaranteed Strongly Connected Dominating Sets in Heterogeneous Wireless Sensor Networks 1126

ChunYan Liu (Harbin Institute of Technology ShenZhen Graduate School, P.R. China); Hejiao Huang (Harbin Institute of Technology, P.R. China); Hongwei Du (Harbin Institute of Technology Shenzhen Graduate School, P.R. China); Xiaohua Jia (City University of Hong Kong, Hong Kong)

Performance-Guaranteed Approximation Algorithm for Fault-Tolerant Connected Dominating Set in Wireless Networks 1135

Zhao Zhang (Zhejiang Normal University, P.R. China); Jiao Zhou (Xinjiang University, P.R. China); Yuchang Mo (Zhejiang Normal University, P.R. China); Ding-Zhu Du (University of Texas, Dallas, USA)

Pulses in the Sand: Impulse Response Analysis of Wireless Underground Channel 1143

Abdul Salam, Mehmet Can Vuran and Suat Irmak (University of Nebraska-Lincoln, USA)

Wed-B.3: Privacy

Room: Seacliff C+D

Chair: Ming Li (University of Nevada, Reno, USA)

RescueDP: Real-time Spatio-temporal Crowd-sourced Data Publishing with Differential Privacy 1152

Qian Wang, Yan Zhang, Xiao Lu and Zhibo Wang (Wuhan University, P.R. China); Zhan Qin (SUNY at Buffalo, USA); Kui Ren (State University of New York at Buffalo, USA)

Mind Your Probes: De-Anonymization of Large Crowds Through Smartphone WiFi Probe Requests 1161

Adriano Di Luzio, Alessandro Mei and Julinda Stefa (Sapienza University of Rome, Italy)

Catch Me in the Dark: Effective Privacy-preserving Outsourcing of Feature Extractions over Image Data 1170

Qian Wang and Shengshan Hu (Wuhan University, P.R. China); Kui Ren (State University of New York at Buffalo, USA); Jingjun Wang, Zhibo Wang and Minxin Du (Wuhan University, P.R. China)

PriStream: Privacy-Preserving Distributed Stream Monitoring of Thresholded Percentile Statistics 1179

Jingchao Sun (Arizona State University, USA); Rui Zhang (University of Hawaii, USA); Jinxue Zhang and Yanchao Zhang (Arizona State University, USA)

Wed-B.4: Network Measurements

Room: Bayview A

Chair: Przemyslaw Pawelczak (Delft University of Technology, The Netherlands)

Rot at the Roots? Examining Public Timing Infrastructure 1188

Kanthaiah Sivapragasam Vijayalayan (The University of Melbourne, Australia); Darryl Veitch (University of Technology Sydney, Australia)

Accurate Recovery of Internet Traffic Data: A Tensor Completion Approach 1197

Kun Xie and Lele Wang (State University of New York at Stony Brook, USA); Xin Wang (Stony Brook University, USA); Gaogang Xie (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Jigang Wen (Chinese Academy of Science & Institute of Computing Technology, P.R. China); Guangxing Zhang (Institute of Computing Technology Chinese Academy of Sciences, P.R. China)

Apps on the Move: A Fine-Grained Analysis of Usage Behavior of Mobile Apps 1206

Lin Yang (Hong Kong University of Science and Technology, Hong Kong); Mingxuan Yuan (Noah's Ark Lab, Huawei, Hong Kong); Wei Wang and Qian Zhang (Hong Kong University of Science and Technology, Hong Kong); Jia Zeng (Noah's Ark Lab, Huawei & Soochow University, Hong Kong)

Characterizing IPv6 control and data plane stability 1215

Ioana Livadariu and Ahmed Mustafa Elmokashfi (Simula Research Laboratory, Norway); Amogh Dhamdhere (CAIDA, University of California, San Diego, USA)

Wednesday, April 13, 13:30 - 15:00

Wed-C.1: Datacenter Networks II

Room: Grand Ballroom B

Chair: Haiying Shen (Clemson University, USA)

Online and Elastic Resource Reservations for Multi-tenant Datacenters 1224

Carlo Fuerst (TU Berlin, Germany); Stefan Schmid (Aalborg University, Denmark); Lalith Suresh (TU Berlin, Germany); Paolo Costa (Microsoft Research, United Kingdom)

Sneak-Peek: High Speed Covert Channels in Data Center Networks 1233

Rashid Tahir (University of Illinois at Urbana-Champaign, USA); Mohammad Taha Khan (Lahore University of Management Sciences, Pakistan); Xun Gong (Google, USA); Adnan Ahmed (Lahore University of Management Sciences, Pakistan); AmirEmad Ghassami (University of Illinois at Urbana-Champaign, USA); Hasanat Kazmi (Lahore University of Management Sciences, Pakistan); Matthew Caesar (University of Illinois at Urbana-Champaign, USA); Fareed Zaffar (LUMS, Pakistan); Negar Kiyavash (University of Illinois at Urbana-Champaign, USA)

A Simple Congestion-Aware Algorithm for Load Balancing in Datacenter Networks 1242

Mehrnoosh Shafiee and Javad Ghaderi (Columbia University, USA)

Flutter: Scheduling Tasks Closer to Data Across Geo-Distributed Datacenters 1251

Zhiming Hu (Nanyang Technological University, Singapore); Baochun Li (University of Toronto, Canada); Jun Luo (Nanyang Technological University, Singapore)

Wed-C.2: Online Social Networks I

Room: Grand Ballroom C

Chair: Zongqing Lu (The Pennsylvania State University, USA)

Profit Maximization for Multiple Products in Online Social Networks 1260

Huiyuan Zhang, Huiling Zhang, Alan Kuhnle and My T. Thai (University of Florida, USA)

Using Crowdsourced Data in Location-based Social Networks to Explore Influence Maximization 1269

Ji Li and Zhipeng Cai (Georgia State University, USA); Mingyuan Yan (University of North Georgia, USA); Yingshu Li (Georgia State University, USA)

Minimum Cost Seed Set for Competitive Social Influence 1278

Yuqing Zhu (California State University, Los Angeles, USA); Deying Li (Renmin University of China, P.R. China); Zhao Zhang (Zhejiang Normal University, P.R. China)

Terminal-Set-Enhanced Community Detection in Social Networks 1287

Guangmo Tong and Lei Cui (The University of Texas at Dallas, USA); Weili Wu (UT Dallas, USA); Cong Liu (The University of Texas at Dallas, USA); Ding-Zhu Du (University of Texas, Dallas, USA)

Wed-C.3: Wireless Network Optimization

Room: Bayview B

Chair: Zhangyu Guan (Northeastern University, USA)

Heavy-Ball: A New Approach to Tame Delay and Convergence in Wireless Network Optimization 1296

Jia Liu and Atilla Eryilmaz (Ohio State University, USA); Ness B. Shroff (The Ohio State University, USA); Elizabeth Serena Bentley (AFRL, USA)

Distributed Optimization in Energy Harvesting Sensor Networks with Dynamic In-network Data Processing 1305

Shusen Yang (University of Liverpool, United Kingdom); Yad Tahir and Po-Yu Chen (Imperial College London, United Kingdom); Alan Marshall (University of Liverpool, United Kingdom); Julie McCann (Imperial College London, United Kingdom)

Capacitated Kinetic Clustering in Mobile Networks by Optimal Transportation Theory 1314

Chien-Chun Ni, Zhengyu Su, Jie Gao and David Gu (Stony Brook University, USA)

Optimal Local Data Exchange in Fiber-Wireless Access Network: A Joint Network Coding and Device Association Design 1323

Jin Wang (Soochow University & City University of Hong Kong, P.R. China); Kejie Lu (University of Puerto Rico at Mayaguez, Puerto Rico); Jianping Wang (City University of Hong Kong, Hong Kong); Chunming Qiao (State University of New York at Buffalo, USA)

Wed-C.4: Mobile Sensing

Room: Seacliff C+D

Chair: Mehmet Can Vuran (University of Nebraska-Lincoln, USA)

Mosaic: A Low-Cost Mobile Sensing System for Urban Air Quality Monitoring 1332

Yi Gao, Wei Dong and Kai Guo (Zhejiang University, P.R. China); Xue Liu (McGill University, Canada); Yuan Chen, Xiaojin Liu, Jiajun Bu and Chun Chen (Zhejiang University, P.R. China)

BlueAer: A fine-grained urban PM2.5 3D monitoring system using mobile sensing 1341

Yidan Hu, Guojun Dai, Jin Fan, Yifan Wu and Hua Zhang (Hangzhou Dianzi University, P.R. China)

Flowing with the Water: On Optimal Monitoring of Water Distribution Networks by Mobile Sensors 1350

Rong Du (KTH Royal Institute of Technology, Sweden); Carlo Fischione (KTH, Sweden); Ming Xiao (Royal Institute of Technology, Sweden)

Toward Real-time and Cooperative Mobile Visual Sensing and Sharing 1359

Huihui Chen (Northwestern Polytechnical University & Luoyang Institute of Science and Technology, P.R. China); Guo Bin and Zhiwen Yu (Northwestern Polytechnical University, P.R. China); Qi Han (Colorado School of Mines, USA)

Wed-C.5: MIMO Networks

Room: Bayview A

Chair: Prasun Sinha (Ohio State University, USA)

Client as a First-Class Citizen: Practical User-Centric Network MIMO Clustering 1368

Wei-Liang Shen and Kate Ching-Ju Lin (Academia Sinica, Taiwan); Ming-Syan Chen (National Taiwan University, Taiwan); Kun Tan (Microsoft Research Asia, P.R. China)

Random Access Signaling for Network MIMO Uplink 1377

Teng Wei (University of Wisconsin - Madison, USA); Xinyu Zhang (University of Wisconsin-Madison, USA)

Dynamic Power Allocation in MIMO Fading Systems Without Channel Distribution Information 1386

Hao Yu and Michael J. Neely (University of Southern California, USA)

BOOST: Base Station ON-OFF Switching Strategy for Energy Efficient Massive MIMO HetNets 1395

Mingjie Feng and Shiwen Mao (Auburn University, USA); Tao Jiang (Huazhong University of Science and Technology, P.R. China)

Wed-C.6: Cellular Networks Management

Room: Seacliff A

Chair: Chunyi Peng (The Ohio State University, USA)

Libra: Impact Assessment of Cellular Load Balancing 1404

Kanthi Nagaraj (Stanford University, USA); Ajay A Mahimkar, Zihui Ge, Aman Shaikh and Jia Wang (AT&T Labs - Research, USA); Kevin Mohr (AT&T Mobility Services, USA); Mark Stockert (AT&T Labs, USA)

Power Adjustment and Scheduling in OFDMA Femtocell Networks 1413

Michael Lin (Pennsylvania State University, USA); Novella Bartolini (Sapienza University of Rome, Italy); Tom La Porta (Pennsylvania State University, USA)

Achieving Delay Rate-function Optimality in OFDM Downlink with Time-correlated Channels 1422

Zhenzhi Qian (The Ohio State University, USA); Bo Ji (Temple University, USA); Kannan Srinivasan and Ness B. Shroff (The Ohio State University, USA)

Detecting and Localizing End-to-End Performance Degradation for Cellular Data Services 1431

Faraz Ahmed (Michigan State University, USA); Jeffrey J Erman and Zihui Ge (AT&T Labs - Research, USA); Alex X. Liu (Michigan State University, USA); Jia Wang and He Yan (AT&T Labs - Research, USA)

Wed-C.7: Modeling II

Room: Seacliff B

Chair: Douglas Blough (Georgia Institute of Technology, USA)

Survivability in Time-varying Networks 1440

Qingkai Liang and Eytan Modiano (MIT, USA)

Cluster-Aided Mobility Predictions 1449

Jaeseong Jeong (KTH Royal Institute of Technology, Sweden); Mathieu Leconte (Huawei, France); Alexandre Proutiere (Microsoft Research, United Kingdom)

Temporal Correlation of the RSS Improves Accuracy of Fingerprinting Localization 1458

Mei Wang (Shanghai Jiao Tong University, P.R. China); Zhehui Zhang (Shanghai Jiaotong University, P.R. China); Xiaohua Tian (Shanghai Jiao Tong University, P.R. China); Xinbing Wang (Shanghai Jiaotong University, P.R. China)

Computing Network Coded Data Coverage in an Opportunistic Data Dissemination Network 1467

Brenton Walker (Swedish Institute of Computer Science, Sweden)

Wed-C.8: Data Offloading

Room: Marina

Chair: Rong Zheng (McMaster University, Canada)

Cooperative Data Offloading in Opportunistic Mobile Networks 1476

Zongqing Lu and Xiao Sun (The Pennsylvania State University, USA); Tom La Porta (Pennsylvania State University, USA)

Opportunistic WiFi Offloading in a Vehicular Environment: Waiting or Downloading Now? 1485

Ning Wang and Jie Wu (Temple University, USA)

Competitive Auctions for Cost-aware Cellular Traffic Offloading with Optimized Capacity Gain 1494

Yuan Zhang (Nanjing University, P.R. China); Siyuan Tang (Nanjing University, P.R. China); Tingting Chen (California State Polytechnic University, Pomona, USA); Sheng Zhong (Nanjing University, P.R. China)

Energy-Efficient Dynamic Offloading and Resource Scheduling in Mobile Cloud Computing 1503

Songtao Guo (Southwest University, P.R. China); Bin Xiao (The Hong Kong Polytechnic University, Hong Kong); Yuanyuan Yang (Stony Brook University, USA); Yang Yang (Southwest University, P.R. China)

Wednesday, April 13, 15:30 - 17:00

Wed-D.1: SDN for Security & Management

Room: **Grand Ballroom B**

Chair: Jinyuan (Stella) Sun (University of Tennessee, USA)

Contextual, Flow-Based Access Control with Scalable Host-based SDN Techniques 1512

Curtis Taylor, Douglas MacFarland, Doran Smestad and Craig A. Shue (Worcester Polytechnic Institute, USA)

FOUM: A Flow-Ordered Consistent Update Mechanism for Software-Defined Networking in Adversarial Settings 1521

Jingyu Hua, Xin Ge and Sheng Zhong (Nanjing University, P.R. China)

DDoS Attack Detection under SDN Context 1530

Yang Xu and Yong Liu (New York University, USA)

Efficient Round-Trip Time Monitoring in OpenFlow Networks 1539

Alon Atary and Anat Bremler-Barr (Interdisciplinary Center Herzliya, Israel)

Wed-D.2: Renewable Energy

Room: **Grand Ballroom C**

Chair: Prasun Sinha (Ohio State University, USA)

Hybrid Renewable Energy Routing for ISP Networks 1548

Julien Mineraud (University of Helsinki, Finland); Liang Wang (University of Cambridge, United Kingdom); Sasitharan Balasubramaniam (Tampere University of Technology, Finland); Jussi Kangasharju (University of Helsinki, Finland)

Wind Blows, Traffic Flows: Green Internet Routing under Renewable Energy 1557

Yuan Yang (Tsinghua University, P.R. China); Dan Wang (The Hong Kong Polytechnic University, Hong Kong); Pan Dawei (Harbin Engineering University, P.R. China); Mingwei Xu (Tsinghua University, P.R. China)

Adaptive Connected Dominating Set Discovering Algorithm in Energy-Harvest Sensor Networks 1566

Tuo Shi and Siyao Cheng (Harbin Institute of Technology, P.R. China); Zhipeng Cai (Georgia State University, USA); Jianzhong Li (Harbin Institute of Technology, P.R. China)

Panda: Neighbor Discovery on a Power Harvesting Budget 1575

Robert Margolies (AT&T Research, USA); Guy Grebla (Google, USA); Tingjun Chen, Dan Rubenstein and Gil Zussman (Columbia University, USA)

Wed-D.3: Network Security I

Room: **Bayview B**

Chair: Shucheng Yu (University of Arkansas at Little Rock, USA)

On Applying Fault Detectors against False Data Injection Attacks in Cyber-Physical Control Systems 1584

Quyen Vu (Singapore University of Technology and Design, Singapore); Rui Tan (Nanyang Technological University, Singapore); David Yau (Singapore University of Technology and Design, Singapore)

A Novel Framework for Modeling and Mitigating Distributed Link Flooding Attacks 1593

Christos Liaskos (Institute of Computer Science, Foundation of Research and Technology, Hellas, Greece); Vasileios Kotronis (ETH Zurich, Switzerland); Xenofontas Dimitropoulos (FORTH-ICS, Greece)

Understanding Security Group Usage in a Public IaaS Cloud 1602

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

Secure Outsourced Skyline Query Processing via Untrusted Cloud Service Providers 1611

Wenxin Chen (University of Hawaii, USA); Mengjun Liu (Wuhan University, P.R. China); Rui Zhang (University of Hawaii, USA); Yanchao Zhang (Arizona State University, USA); Shubo Liu (Wuhan University, P.R. China)

Wed-D.4: Visible Light Communications

Room: Seacliff C+D

Chair: Tam Vu (University of Colorado Denver & University of Colorado, Denver, USA)

SoftLight: Adaptive Visible Light Communication over Screen-Camera Links 1620

Wan Du, Jansen Christian Liando and Mo Li (Nanyang Technological University, Singapore)

CeilingCast: Energy Efficient and Location-Bound Broadcast Through LED-Camera Communication 1629

Jie Hao, Yanbing Yang and Jun Luo (Nanyang Technological University, Singapore)

High-Rate Flicker-Free Screen-Camera Communication with Spatially Adaptive Embedding 1638

Viet Nguyen and Yaqin Tang (WINLAB, Rutgers University, USA); Ashwin Ashok (Carnegie Mellon University, USA); Marco Gruteser (WINLAB / Rutgers University, USA); Kristin Dana (Rutgers University, USA); Wenjun Hu (Yale University, USA); Eric Wengrowski (Rutgers University, USA); Narayan Mandayam (WINLAB, Rutgers University, USA)

Uber-in-Light: Unobtrusive Visible Light Communication Leveraging Complementary Color Channel 1647

Mostafa M. Izz Mohamed (IUPUI, USA); Zhongyuan Li (Stevens Institute of Technology, USA); Hongbo Liu (Indiana University-Purdue University Indianapolis, USA); Yingying Chen (Stevens Institute of Technology, USA); Feng Li (Indiana University-Purdue University Indianapolis, USA)

Wed-D.5: Multi-hop Wireless

Room: Bayview A

Chair: Dimitrios Koutsonikolas (University at Buffalo, SUNY, USA)

Nullification in the Air: Interference Neutralization in Multi-Hop Wireless Networks 1656

Huacheng Zeng, Xu Yuan, Xiaoqi Qin, Yi Shi and Thomas Hou (Virginia Tech, USA); Wenjing Lou (Virginia Tech & National Science Foundation, USA)

Queue-Affectance-based Scheduling in Multi-hop Wireless Networks under SINR Interference Constraints 1665

Changhee Joo (UNIST, Korea); Myeongseon Shin (Ulsan National Institute of Science and Technology, Korea)

Interference-Aware Time-Based Fairness for Multihop Wireless Networks 1674

Douglas Blough (Georgia Institute of Technology, USA); Giovanni Resta (Istituto di Informatica e Telematica, Italy); Paolo Santi (IIT-CNR, Italy)

***A Decomposition Principle for Link and Relay Selection in Dual-hop 60 GHz Networks* 1683**
Zhifeng He and Shiwen Mao (Auburn University, USA)

Wed-D.6: Scheduling

Room: Seacliff A

Chair: Qiang Ye (University of Prince Edward Island, Canada)

***MaxWeight Scheduling: "Smoothness" of the Service Process* 1692**

Rahul Singh (Massachusetts Institute of Technology, USA); Alexander Stolyar (Bell Labs, Alcatel-Lucent, USA)

***Timely Wireless Flows with Arbitrary Traffic Patterns: Capacity Region and Scheduling Algorithms* 1701**

Lei Deng (The Chinese University of Hong Kong, Hong Kong); Chih-Chun Wang (Purdue University, USA); Minghua Chen (The Chinese University of Hong Kong, P.R. China); Shizhen Zhao (Purdue University, USA)

***Application-Aware Traffic Scheduling for Workload Offloading in Mobile Clouds* 1710**

Liang Tong (University of Tennessee, Knoxville, USA); Wei Gao (University of Tennessee, USA)

***Optimal Wireless Power Transfer Scheduling for Delay Minimization* 1719**

Feng Shan, Luo Junzhou and Weiwei Wu (Southeast University, P.R. China); Xiaojun Shen (University of Missouri-Kansas City, USA)

Wed-D.7: Optimization II

Room: Seacliff B

Chair: Xiaohua Xu (Michigan Technological University, USA)

***Cyber Maintenance Policy Optimization via Adaptive Learning* 1728**

Yue Tan (The Ohio State University, USA); Cathy Xia (Ohio-State University, USA)

***Online Multi-stage Decisions for Robust Power-Grid Operations under High Renewable Uncertainty* 1737**

Shizhen Zhao, Xiaojun Lin, Dionysios Aliprantis and Villegas Hugo (Purdue University, USA); Minghua Chen (The Chinese University of Hong Kong, P.R. China)

***Update or Wait: How to Keep Your Data Fresh* 1746**

Yin Sun (the Ohio State University, USA); Elif Uysal-Biyikoglu (METU & Currently on leave at The Ohio State University, Turkey); Roy Yates (Rutgers University, USA); Can Emre Koksall and Ness B. Shroff (The Ohio State University, USA)

***Optimizing Coflow Completion Times with Utility Max-Min Fairness* 1755**

Li Chen, Wei Cui and Baochun Li (University of Toronto, Canada); Bo Li (Hong Kong University of Science and Technology, Hong Kong)

Wed-D.8: Traffic Analysis

Room: Marina

Chair: Wei Gao (University of Tennessee, USA)

***Privacy-preserving Deep Packet Inspection in Outsourced Middleboxes* 1764**

Xingliang Yuan, Xinyu Wang, Jianxiong Lin and Cong Wang (City University of Hong Kong, Hong Kong)

***Heavy-Traffic Analysis of QoE Optimality for On-Demand Video Streams Over Fading Channels* 1773**

Ping-Chun Hsieh and I-Hong Hou (Texas A&M University, USA)

Demographics Inference Through Wi-Fi Network Traffic Analysis 1782

Huaxin Li, Zheyu Xu and Haojin Zhu (Shanghai Jiao Tong University, P.R. China); Di Ma (University of Michigan-Dearborn, USA); Shuai Li (University of Minnesota, USA); Kai Xing (University of Science and Technology of China, P.R. China)

Traffic At-a-Glance: Time-Bounded Analytics on Large Visual Traffic Data 1791

Xinfeng Li (The Ohio State University, USA); Gang Li and Fan Yang (the Ohio State University, USA); Jin Teng and Dong Xuan (The Ohio State University, USA); Biao Chen (University of Macau, Macao)

Thursday, April 14

Thursday, April 14, 08:30 - 10:00

Thu-A.1: Flow Control in Datacenter Networks

Room: Grand Ballroom B

Chair: Georgios S. Paschos (Huawei Technologies, France)

MMPTCP: A Multipath Transport Protocol for Data Centers 1800

Morteza Kheirkhah Sabetghadam, Ian Wakeman and George Parisi (University of Sussex, United Kingdom)

Deadline-Aware Bandwidth Sharing by Allocating Switch Buffer in Data Center Networks 1809

Jiao Zhang (Beijing University of Posts and Telecommunications, P.R. China)

OPTAS: Decentralized Flow Monitoring and Scheduling for Tiny Tasks 1818

Ziyang Li, Yiming Zhang and Dongsheng Li (National University of Defense Technology, P.R. China); Kai Chen (Hong Kong University of Science and Technology, Hong Kong); Yuxing Peng (National University of Defense Technology, P.R. China)

ARS: Cross-layer Adaptive Request Scheduling to Mitigate TCP Incast in Data Center Networks 1827

Jiawei Huang (Central South University); Tian He (University of Minnesota, USA); Yi Huang and Jianxin Wang (Central South University, P.R. China)

Thu-A.2: Cloud Computing II

Room: Grand Ballroom C

Chair: Haiying Shen (Clemson University, USA)

Frugal Topology Construction for Stream Aggregation in the Cloud 1836

Rachid Guerraoui (Swiss Federal Institute of Technology (EPFL), Switzerland); Erwan Le Merrer (Technicolor, France); Rhicheck Patra (EPFL, Switzerland); Bao-Duy Tran (Google, Australia)

TailCutter: Wisely Cutting Tail Latency in Cloud CDN under Cost Constraints 1845

Zeqi Lai and Yong Cui (Tsinghua University, P.R. China); Minming Li (City University of Hong Kong, Hong Kong); Zhenhua Li, Ningwei Dai and Yuchi Chen (Tsinghua University, P.R. China)

Randomized Algorithms for Scheduling VMs in the Cloud 1854

Javad Ghaderi (Columbia University, USA)

Successor: Proactive Cache Warm-up of Destination Hosts in Virtual Machine Migration Contexts 1863

Tao Lu, Ping Huang, Morgan Stuart, Yuhua Guo and Xubin He (Virginia Commonwealth University, USA); Ming Zhang (EMC Corporation, USA)

Thu-A.3: Sensor Networks

Room: Bayview B

Chair: Yuqing Zhu (California State University, Los Angeles, USA)

Taming Collisions for Delay Reduction in Low-Duty-Cycle Wireless Sensor Networks 1872

Long Cheng (BUAA & VT); Yu Gu (IBM Watson Health, USA); Jianwei Niu (Beihang University, P.R. China); Ting Zhu (University of Maryland, Baltimore County, USA); Cong Liu (The University of Texas at Dallas, USA); Qingquan Zhang (University of Maryland, Baltimore County, USA); Tian He (University of Minnesota, USA)

Murphy loves CI: Unfolding and Improving Constructive Interference in WSNs 1881

Vijay S Rao (Delft University of Technology, The Netherlands); Madhusuhan Koppal (IISc, India); R Venkatesha Prasad (TU Delft, The Netherlands); T Venkata Prabhakar (IISc, India); Chayan Sarkar and Ignas Niemegeers (Delft University of Technology, The Netherlands)

No-Cost Distance Estimation Using Standard WSN Radios 1890

Georg von Zengen, Yannic Schröder, Stephan Rottmann, Felix Büsching and Lars C Wolf (Technische Universität Braunschweig, Germany)

DiVA: Distributed Voronoi-based Acoustic Source Localization with Wireless Sensor Networks 1899

Xueshu Zheng, Shuailing Yang, Naigao Jin and Lei Wang (Dalian University of Technology, P.R. China); Mathew L. Wymore and Daji Qiao (Iowa State University, USA)

Thu-A.4: Wearables

Room: Seacliff C+D

Chair: Xiaohua Tian (Shanghai Jiao Tong University, P.R. China)

GlassGesture: Exploring Head Gesture Interface of Smart Glasses 1908

Shanhe Yi and Zhengrui Qin (College of William and Mary, USA); Edmund Novak (William and Mary, USA); Yafeng Yin (Nanjing University, P.R. China); Qun Li (College of William and Mary, USA)

Battery-free Sensing Platform for Wearable Devices: The Synergy Between Two Feet 1917

Qianyi Huang, Yan Mei, Wei Wang and Qian Zhang (Hong Kong University of Science and Technology, Hong Kong)

Leveraging Wearables for Steering and Driver Tracking 1926

Cagdas Karatas, Luyang Liu and Hongyu Li (Rutgers University, USA); Jian Liu (Stevens Institute of Technology, USA); Yan Wang (Binghamton University, USA); Sheng Tan and Jie Yang (Florida State University, USA); Yingying Chen (Stevens Institute of Technology, USA); Marco Gruteser (WINLAB / Rutgers University, USA); Richard Martin (Rutgers University, USA)

Topology Optimization for Galvanic Coupled Wireless Intra-body Communication 1935

Meenupriya Swaminathan, Ufuk Muncuk and Kaushik Chowdhury (Northeastern University, USA)

Thu-A.5: Crowdsourcing

Room: Bayview A

Chair: Qinghua Li (University of Arkansas, USA)

Incentivizing Crowdsourcing Systems with Network Effects 1944

Yanjiao Chen and Baochun Li (University of Toronto, Canada); Qian Zhang (Hong Kong University of Science and Technology, Hong Kong)

Privacy-preserving Verifiable Data Aggregation and Analysis for Cloud-assisted Mobile Crowdsourcing 1953

Gaoqiang Zhuo, Qi Jia and Linke Guo (Binghamton University, USA); Ming Li (University of Nevada, Reno, USA); Pan Li (Case Western Reserve University, USA)

Crowdlet: Optimal Worker Recruitment for Self-Organized Mobile Crowdsourcing 1962

Lingjun Pu (Nankai University, P.R. China); Xu Chen (University of Goettingen, Germany); Jingdong Xu (Nankai Univ, P.R. China); Xiaoming Fu (University of Goettingen, Germany)

Incentive Mechanism for Proximity-based Mobile Crowd Service Systems 1971

Honggang Zhang (University of Massachusetts Boston, USA); Benyuan Liu (University of Massachusetts Lowell, USA); Hengky Susanto (Hong Kong University of Science and Technology, Hong Kong); Guoliang Xue (Arizona State University, USA); Tong Sun (University of Massachusetts Lowell, USA)

Thu-A.6: Routing II

Room: Seacliff A

Chair: Xiaohua Xu (Michigan Technological University, USA)

Path computation in multi-layer networks: Complexity and algorithms 1980

Mohamed Lamine Lamali (Nokia Bell Labs, France); Nasreddine Fergani (Nokia Bell Labs); Johanne Cohen (LRI-CNRS & PRISM-CNRS, France); Hélia Pouyllau (Thales Research and Technology, France)

Optimizing Restoration with Segment Routing 1989

Fang Hao (Bell Labs, Nokia, USA); M. Kodialam (Bell Labs, USA); T. V. Lakshman (Bell Labs, Alcatel-Lucent, USA)

The Quest for Resilient (Static) Forwarding Tables 1998

Marco Chiesa (Université Catholique de Louvain, Belgium); Ilya Nikolaevskiy (Aalto University, Finland); Slobodan Mitrović (École Polytechnique Fédérale de Lausanne, Switzerland); Aurojit Panda (UC Berkeley, USA); Andrei Gurtov (Aalto University, Finland); Aleksander Madry (MIT, USA); Michael Schapira (Hebrew University of Jerusalem, Israel); Scott Shenker (U. C. Berkeley and ICSI, USA)

Anonymous Addresses for Efficient and Resilient Routing in F2F Overlays 2007

Stefanie Roos (TU Dresden, Germany); Martin Beck (Technische Universität Dresden, Germany); Thorsten Strufe (TU Dresden, Germany)

Thu-A.7: Cognitive Radio Networks

Room: Seacliff B

Chair: Rui Zhang (University of Hawaii, USA)

Dynamic Control Channel MAC for Underwater Cognitive Acoustic Networks 2016

Yu Luo (South Dakota School of Mines and Technology, USA); Lina Pu (University of Connecticut, USA); Zheng Peng (University of Connecticut & AquaSeNT LLC., USA); Jun-Hong Cui (University of Connecticut & Jilin University, USA)

SpecWatch: Adversarial Spectrum Usage Monitoring in CRNs with Unknown Statistics 2025

Ming Li, Dejun Yang and Jian Lin (Colorado School of Mines, USA); Ming Li (University of Arizona, USA); Jian Tang (Syracuse University, USA)

A Time-efficient Rendezvous Algorithm with a Full Rendezvous Degree for Heterogeneous Cognitive Radio Networks 2034

Bo Yang (Shenyang Institute of Automation, Chinese Academy of Sciences, P.R. China); Meng Zheng (Shenyang Institute of Automation, Chinese Academy of Sciences, P.R. China); Wei Liang (Shenyang Institute of Automation, P.R. China)

Multi-user lax communications: a multi-armed bandit approach 2043

Orly Avner (Technion, Israel); Shie Mannor (Technion)

Thu-A.8: Wireless Networks Economics

Room: Marina

Chair: Przemyslaw Pawelczak (Delft University of Technology, The Netherlands)

Economics of Public Wi-Fi Monetization and Advertising 2052

Haoran Yu, Man Hon Cheung, Lin Gao and Jianwei Huang (The Chinese University of Hong Kong, Hong Kong)

A Truthful Pricing Mechanism for Sponsored Content in Wireless Networks 2061

Matthew Andrews (Nokia Bell Labs, USA); Yue Jin (Alcatel-Lucent, Ireland); Marty Reiman (Bell Labs, Lucent Technologies, USA)

TDS: Time-Dependent Sponsored Data Plan for Wireless Data Traffic Market 2070

Liang Zhang (The Hong Kong Polytechnic University, Hong Kong); Weijie Wu (Huawei Technologies Co., Ltd, Hong Kong); Dan Wang (The Hong Kong Polytechnic University, Hong Kong)

Quality of Video Oriented Pricing Incentive for Mobile Video Offloading 2079

Honghai Wu and Liang Liu (Beijing University of Posts and Telecommunications, P.R. China); Xi Zhang (Texas A&M University, ECE Department, USA); Huadong Ma (Beijing University of Posts and Telecommunications, P.R. China)

Thursday, April 14, 10:30 - 12:00

Thu-B.1: Software Defined Networks II

Room: Grand Ballroom C

Chair: Weifa Liang (The Australian National University, Australia)

MED: The Monitor-Emulator-Debugger for Software-Defined Networks 2088

Quanquan Zhi (Institute for Interdisciplinary Information Sciences Tsinghua University, P.R. China); Wei Xu (Tsinghua University, P.R. China)

Network Functions Virtualization with Soft Real-Time Guarantees 2097

Yang Li, Linh Thi Xuan Phan and Boon Thau Loo (University of Pennsylvania, USA)

Aggregation Points Planning for Software-Defined Network Based Smart Grid Communications 2106

Shaowei Wang and Xinxin Huang (Nanjing University, P.R. China)

Deploying Chains of Virtual Network Functions: On the Relation Between Link and Server Usage 2115

Tung-Wei Kuo (Academia Sinica, Taiwan); Bang-Heng Liou (National Tsing Hua University, Taiwan); Kate Ching-Ju Lin (Academia Sinica, Taiwan); Ming-Jer Tsai (National Tsing Hua University, Taiwan)

Thu-B.2: Mobile Videos

Room: Bayview B

Chair: Jussi Kangasharju (University of Helsinki, Finland)

A Unified Framework for Automatic Quality-of-Experience Optimization in Mobile Video Streaming 2124

Yan Liu and Jack Y. B. Lee (The Chinese University of Hong Kong, Hong Kong)

VSynC: Cloud Based Video Streaming Service for Mobile Devices 2133

Eilwoo Baik (University of California, Davis, USA); Amit Pande (University of California Davis, CA, USA); Zizhan Zheng and Prasant Mohapatra (University of California, Davis, USA)

Spice: Socially-Driven Learning-Based Mobile Media Prefetching 2142

Chao Wu (Tsinghua University, P.R. China); Xu Chen (University of Goettingen, Germany); Yuezhi Zhou (Tsinghua University, P.R. China); Ningyuan Li (Zhongyuan University of Technology, P.R. China); Xiaoming Fu (University of Goettingen, Germany); Yaoyue Zhang (Tsinghua University)

JurCast: Joint User and Rate Allocation for Video Multicast over Multiple APs 2151

Hui Wang, Wei Tsang Ooi and Mun Choon Chan (National University of Singapore, Singapore)

Thu-B.3: Antennas

Room: Seacliff C+D

Chair: Joerg Widmer (IMDEA Networks Institute, Spain)

***Oblivious Neighbor Discovery for Wireless Devices with Directional Antennas* 2160**

Lin Chen (The University of Paris-Sud, France); Yong Li (Tsinghua University, P.R. China); Athanasios V. Vasilakos (Lulea University of Technology, Sweden)

***Antenna Orientation and Range Assignment in WSNs with Directional Antennas* 2169**

Tien Tran (University of Texas at Dallas, USA); Min Kyung An (Sam Houston State University, USA); Dung Huynh (University of Texas at Dallas, USA)

***Practical Antenna Selection for WLAN AP* 2178**

Seungmin Yoo, Seongwon Kim and Youngwook Son (Seoul National University, Korea); Jaehong Yi (Seoul National University & MWNL, Korea); Sunghyun Choi (Seoul National University, Korea)

***Resilient Multi-User Beamforming WLANs: Mobility, Interference, and Imperfect CSI* 2187**

Oscar Bejarano (Cisco Systems, Inc.); Roger Pierre Fabris Hoefel (Federal University of Rio Grande do Sul, Brazil); Edward W. Knightly (Rice University, USA)

Thu-B.4: RFID

Room: Bayview A

Chair: Jinsong Han (Xi'an Jiaotong University, P.R. China)

***Wisent: Robust Downstream Communication and Storage for Computational RFIDs* 2196**

Jethro Tan and Przemyslaw Pawelczak (Delft University of Technology, The Netherlands); Aaron N Parks and Smith Joshua (University of Washington, USA)

***Moving Tag Detection via Physical Layer Analysis for Large-Scale RFID Systems* 2205**

Chuyu Wang, Lei Xie, Wei Wang, Tao Xue and Sanglu Lu (Nanjing University, P.R. China)

***TOP-k Queries for Multi-category RFID Systems* 2214**

Xiulong Liu and Keqiu Li (Dalian University of Technology, P.R. China); Jie Wu (Temple University, USA); Alex X. Liu (Michigan State University, USA); Xin Xie (Dalian University of Technology, P.R. China); Chunsheng Zhu (The University of British Columbia, Canada); Weilian Xue (Liaoning Normal University, P.R. China)

***Ubiquitous Tagless Object Locating with Ambient Harmonic Tags* 2223**

Yunfei Ma and Edwin Kan (Cornell University, USA)

Thursday, April 14, 13:30 - 15:00

Thu-C.1: Online Social Networks II

Room: Grand Ballroom B

Chair: Yuqing Zhu (California State University, Los Angeles, USA)

***De-anonymizing Social Networks and Inferring Private Attributes Using Knowledge Graphs* 2232**

Jianwei Qian and Xiang-Yang Li (Illinois Institute of Technology, USA); Chunhong Zhang (Beijing University of Posts & Telecommunication, P.R. China); Linlin Chen (Illinois Institute of Technology, USA)

***Social Learning Networks: Efficiency Optimization for MOOC Forums* 2241**

Christopher Brinton (Princeton University, USA); Swapna Buccapatnam (IBM T. J. Watson Research Center, USA); Felix Ming Fai Wong, Mung Chiang and H. Vincent Poor (Princeton University, USA)

High-Precision Shortest Distance Estimation for Large-Scale Social Networks 2250

Jie Cheng (University of Prince Edward Island, Canada); Yangyang Zhang (Harbin Institute of Technology Shenzhen Graduate School, P.R. China); Qiang Ye (University of Prince Edward Island, Canada); Hongwei Du (Harbin Institute of Technology Shenzhen Graduate School, P.R. China)

Adwords Management for Third-parties in SEM: an Optimisation Model and the Potential of Twitter 2259

Dong Wang (Institute of Computing Technology, Chinese Academy of Sciences & INRIA France, P.R. China); Zhenyu Li and Gaogang Xie (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Mohamed Ali Kaafar (NICTA & NICTA Australia, Australia); Kavé Salamatian (LISTIC PolyTech, Université de Savoie Chambéry Annecy, France)

Thu-C.2: Network Security II

Room: Grand Ballroom C

Chair: Lixin Wang (Paine College, USA)

Hunting for Invisibility: Characterizing and Detecting Malicious Web Infrastructures through Server Visibility Analysis 2268

Jialong Zhang (Texas A&M University, USA); Xin Hu and Jiyong Jang (IBM Research, USA); Ting Wang (Lehigh University, USA); Guofei Gu (Texas A&M University, USA); Marc Stoecklin (IBM Research, Switzerland)

A Study of Personal Information in Human-chosen Passwords and Its Security Implications 2277

Yue Li (College of William & Mary, USA); Haining Wang (University of Delaware, USA); Kun Sun (George Mason University, USA)

Graph-Based Privacy-Preserving Data Publication 2286

Xiang-Yang Li (Illinois Institute of Technology, USA); Chunhong Zhang (Beijing University of Posts & Telecommunication, P.R. China); Taeho Jung, Jianwei Qian and Linlin Chen (Illinois Institute of Technology, USA)

On the Relative De-anonymizability of Graph Data: Quantification and Evaluation 2295

Shouling Ji (Georgia Institute of Technology, USA); Weiqing Li (Georgia Tech, USA); Shukun Yang (Georgia Institute of Technology); Prateek Mittal (Princeton University, USA); Raheem Beyah (Georgia Institute of Technology, USA)

Thu-C.3: Spectrum Sharing

Room: Bayview B

Chair: Michael Sirivianos (Cyprus University of Technology, Cyprus)

Incentivizing Spectrum Sensing in Database-Driven Dynamic Spectrum Sharing 2304

Bo Gao (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Sudeep Bhattarai, Jung-Min (Jerry) Park and Yaling Yang (Virginia Tech, USA); Min Liu (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China); Kexiong (Curtis) Zeng and Yanzhi Dou (Virginia Tech, USA)

Can the Privacy of Primary Networks in Shared Spectrum be Protected? 2313

Matthew A Clark (University of Southern California & The Aerospace Corporation, USA); Konstantinos Psounis (University of Southern California, USA)

Privacy-Preserving Crowdsourced Spectrum Sensing 2322

Xiaocong Jin and Yanchao Zhang (Arizona State University, USA)

CU-LTE: Spectrally-Efficient and Fair Coexistence Between LTE and Wi-Fi in Unlicensed Bands 2331

Zhangyu Guan and Tommaso Melodia (Northeastern University, USA)

Thu-C.4: Cellular Networks Coverage

Room: Seacliff C+D

Chair: Zhu Wang (State University of New York at Oneonta, USA)

Understanding and Diagnosing Real-World Femtocell Performance Problems 2340

Chunyi Peng (The Ohio State University, USA); Yuanjie Li (University of California at Los Angeles, USA); Zhuoran Li and Jie Zhao (The Ohio State University, USA); Jiaqi Xu (the Ohio State University, USA)

HybridCell: Cellular connectivity on the fringes with demand-driven local cells 2349

Paul Schmitt (UC Santa Barbara, USA); Daniel Iland (University of California, Santa Barbara, USA); Mariya Zheleva (UAlbany SUNY, USA); Elizabeth Belding (University of California, Santa Barbara, USA)

Stochastic Geometric Analysis of Handoffs in User-Centric Cooperative Wireless Networks 2358

Wei Bao (The University of Sydney, Australia); Ben Liang (University of Toronto, Canada)

Shadowing and Coverage in Poisson Buildings 2367

Junse Lee (University of Texas Austin, USA); Xincheng Zhang (The University of Texas at Austin & Qualcomm Inc., USA); Francois Baccelli (UT Austin & The University of Texas at Austin, USA)

Thu-C.5: Wireless Scheduling

Room: Bayview A

Chair: Zhao Zhang (Zhejiang Normal University, P.R. China)

Mobility-Aware Real-Time Scheduling for Low-Power Wireless Networks 2376

Behnam Dezfouli, Marjan Radi and Octav Chipara (University of Iowa, USA)

An Antithetic Coupling Approach to Multi-Chain based CSMA Scheduling Algorithms 2385

Jaewook Kwak and Do Young Eun (North Carolina State University, USA)

Efficient scheduling algorithms for on-demand wireless data broadcast 2394

Zaixun Lu (Washington State University, USA); Weili Wu (UT Dallas, USA); Wei Li (Texas Southern University, USA); Miao Pan (University of Houston, USA)

Approximation Algorithms for Wireless Opportunistic Spectrum Scheduling in Cognitive Radio Networks 2403

Xiaohua Xu and Min Song (Michigan Technological University, USA)

Thu-C.6: TCP

Room: Seacliff A

Chair: Qiang Ye (University of Prince Edward Island, Canada)

Estimation Method for the Delay Performance of Closed-loop Flow Control with Application to TCP 2410

Lübben Ralf (Robert-Bosch GmbH, Germany); Markus Fidler (Leibniz Universität Hannover, Germany)

Revisiting Congestion Control for Multipath TCP with Shared Bottleneck Detection 2419

Simone Ferlin (University of Oslo & Simula Research Laboratory, Norway); Ozgu Alay and Thomas Dreibholz (Simula Research Laboratory, Norway); David Hayes and Michael Welzl (University of Oslo, Norway)

SAMPO: Online Subflow Association for Multipath TCP with Partial Flow Record 2428

Yang Zhang, Hesham Mekky and Zhi-Li Zhang (University of Minnesota, USA); Fang Hao (Bell Labs, Nokia, USA); Sarit Mukherjee (Bell Labs USA, USA); T. V. Lakshman (Bell Labs, Alcatel-Lucent, USA)

TCP Ordo: The cost of ordered processing in TCP Servers 2437

Mohan Kumar Kumar and Ada Gavrilovska (Georgia Institute of Technology, USA)

Thu-C.7: Network Science II

Room: Seacliff B

Chair: Alessandro Mei (Sapienza University of Rome, Italy)

DESIR: Decoy-Enhanced Seamless IP Randomization 2446

Jianhua Sun (College of William and Mary, USA); Kun Sun (George Mason University, USA)

To Live or To Die: Encountering Conflict Information Propagation over Simple Networks 2455

Jie Wang (North Carolina State University, USA); Wenye Wang (NC State University, USA)

CSMA Networks in a Many-Sources Regime: A Mean-Field Approach 2464

Fabio Cecchi, Sem Borst and Johan van Leeuwen (Eindhoven University of Technology, The Netherlands); Philip Whiting (Macquarie University, Australia)

Inductive Coloring: Implementing Basic Communication Primitives with Rayleigh-Fading Interference 2473

Yuxuan Wang (The University of Hong Kong & Zhejiang University, P.R. China); Dongxiao Yu (The University of Hong Kong, Hong Kong); Qipeng Liu (Princeton University, USA); Francis C.M. Lau (The University of Hong Kong, Hong Kong)

Thu-C.8: Modeling III

Room: Marina

Chair: Jinyuan (Stella) Sun (University of Tennessee, USA)

Towards Efficient Content-aware Search over Encrypted Outsourced Data in Cloud 2482

Zhangjie Fu (Nanjing University of Information Science and Technology & State University of New York at Buffalo, P.R. China); Xingming Sun (Nanjing University of Information Science and Technology, P.R. China); Sai Ji (Nanjing University of Information Science & Technology, P.R. China); Guowu Xie (University of California, Riverside, USA)

BD-ZCS: Multi-cell Interference Coordination via Zadoff-Chu Sequence-based Block Diagonalization 2491

Xueyuan Zhao and Dario Pompili (Rutgers University, USA)

CASE: Cache-assisted Stretchable Estimator for High Speed Per-flow Measurement 2500

Yang Li, Hao Wu, Tian Pan, Huichen Dai, Jianyuan Lu and Bin Liu (Tsinghua University, P.R. China)

Distributed Deterministic Broadcasting Algorithms under the SINR Model 2509

Xiang Tian and Jiguo Yu (Qufu Normal University, P.R. China); Liran Ma (Texas Christian University, USA); Guangshun Li (Qufu Normal University, P.R. China); Xiuzhen Cheng (George Washington Univ, USA)

Thursday, April 14, 15:30 - 17:00

Thu-D.1: Optimization III

Room: Grand Ballroom B

Chair: Eylem Ekici (The Ohio State University, USA)

Online Job Allocation with Hard Allocation Ratio Requirement 2518

Han Deng and I-Hong Hou (Texas A&M University, USA)

Probabilistic Demand Allocation for Cloud Service Brokerage 2527

Chenxi Qiu, Haiying Shen and Liuhua Chen (Clemson University, USA)

Engineering Traffic Uncertainty in the OpenFlow Data Plane 2536

Fei Chen (Zhejiang University, P.R. China); Chunming Wu (College of Computer Science, Zhejiang University, P.R. China); Xiaoyan Hong (University of Alabama, USA); Zhouhao Lu (Zhejiang

University, P.R. China); Zhouhao Wang (Zhejiang University & Tsukuba University, P.R. China); Changting Lin (College of Computer Science, Zhejiang University, P.R. China)

Dynamic Routing for Network Throughput Maximization in Software-Defined Networks 2545

Meitian Huang and Weifa Liang (The Australian National University, Australia); Zichuan Xu (Australian National University, Australia); Wenzheng Xu (Sichuan University & Australian National University, P.R. China); Song Guo (The University of Aizu, Japan); Yinlong Xu (University of Science and Technology of China, P.R. China)

Thu-D.2: Resource Allocation II

Room: Grand Ballroom C

Chair: Xiaohua Xu (Michigan Technological University, USA)

Distributed Load Shedding with Minimum Energy 2554

Kostas Choumas (University of Thessaly, Greece); Georgios S. Paschos (Huawei Technologies, France); Thanasis Korakis (New York University, USA); Leandros Tassioulas (Yale University, USA)

Efficient and Flexible Crowdsourcing of Specialized Tasks with Precedence Constraints 2563

Avhishek Chatterjee (University of Illinois at Urbana-Champaign, USA); Michael Borokhovich (University of Texas at Austin, USA); Lav R. Varshney (University of Illinois at Urbana-Champaign, USA); Sriram Vishwanath (University of Texas Austin, USA)

On Demand Elastic Capacity Planning for Service Auto-scaling 2572

Pavel S Chuprikov (Steklov Mathematical Institute at St. Petersburg & IMDEA Networks Institute, Russia); Sergey Nikolenko (St. Petersburg Academic University, Russia); Kirill Kogan (IMDEA Networks Institute, Spain)

Node-based Service-Balanced Scheduling for Provably Guaranteed Throughput and Evacuation Time Performance 2581

Bo Ji (Temple University, USA); Gagan R Gupta (AT&T Labs, USA); Yu Sang (Temple University, USA)

Thu-D.3: Streaming Video

Room: Bayview B

Chair: Thomas Hou (Virginia Tech, USA)

F.Live: Towards Interactive Live Broadcast FTV Experience 2590

Shannon Chen (University of Illinois at Urbana-Champaign, USA); Zhenhuan Gao and Klara Nahrstedt (University of Illinois at Urbana-Champaign)

Cache Content-Selection Policies for Streaming Video Services 2599

Stefan Dernbach (University of Massachusetts, USA); Azin Ashkan (Technicolor, USA); Christophe Diot (Safran, France); Jim Kurose (University of Massachusetts at Amherst, USA); Nina Taft (Google); Udi Weinsberg (Facebook)

Tracker-assisted rate adaptation for MPEG DASH live streaming 2608

Andrea Detti, Bruno Ricci and Nicola Blefari-Melazzi (University of Rome "Tor Vergata", Italy)

Side-Channel Information Leakage of Encrypted Video Stream in Video Surveillance Systems 2617

Hong Li (Institute of Information Engineering, Chinese Academy of Sciences, P.R. China); Yunhua He (The George Washington University, USA); Limin Sun (Institute of Information Engineering, China Academy of Science, Beijing, P.R. China); Xiuzhen Cheng (George Washington Univ, USA); Jiguo Yu (Qufu Normal University, P.R. China)

Thu-D.4: Heterogeneous Networks

Room: Seacliff C+D

Chair: Yu Hua (Huazhong University of Science and Technology, P.R. China)

***A QoS-enabled Holistic Optimization Framework for LTE-Advanced Heterogeneous Networks* 2626**

Rajarajan Sivaraj (University of California, Davis, USA); Ioannis Broustis (AT&T Labs Research, USA); Nemmara K. Shankaranarayanan (AT&T Laboratories - Research, USA); Vaneet Aggarwal (Purdue University, USA); Rittwik Jana (AT&T Labs Research, USA); Prasant Mohapatra (University of California, Davis, USA)

***ENCORE: An Energy-Aware Multicell Cooperation in Heterogeneous Networks with Content Caching* 2635**

Yi-Han Chiang and Wanjiun Liao (National Taiwan University, Taiwan)

***Optimal Downlink and Uplink User Association in Backhaul-limited HetNets* 2644**

Nikolaos Sapountzis and Thrasyvoulos Spyropoulos (EURECOM, France); Navid Nikaein (Eurecom, France); Umer Salim (Intel Mobile Communications, France)

***Joint Optimization for Cell Configuration and Offloading in Heterogeneous Networks* 2653**

Chan-Ching Hsu, J. Morris Chang and Yu-Wen Chen (Iowa State University, USA)

Thu-D.5: Cloud Storage Systems

Room: Bayview A

Chair: Qiang Ye (University of Prince Edward Island, Canada)

***Mean-Field-Analysis of Coding versus Replication in Cloud Storage Systems* 2662**

Bin Li (University of Illinois at Urbana-Champaign, USA); Aditya Ramamoorthy (Iowa State University, USA); R. Srikant (University of Illinois at Urbana-Champaign, USA)

***Sketch-based Data Placement among Geo-distributed Datacenters for Cloud Storages* 2671**

Boyang Yu and Jianping Pan (University of Victoria, Canada)

***Reducing Access Latency in Erasure Coded Cloud Storage with Local Block Migration* 2680**

Yaochen Hu and Di Niu (University of Alberta, Canada)

***An Economical and SLO-Guaranteed Cloud Storage Service across Multiple Cloud Service Providers* 2689**

Guoxin Liu and Haiying Shen (Clemson University, USA)