

2018 IEEE 39th Sarnoff Symposium

**Newark, New Jersey, USA
24 – 25 September 2018**



IEEE Catalog Number: CFP18PSS-POD
ISBN: 978-1-5386-6155-0

**Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP18PSS-POD
ISBN (Print-On-Demand):	978-1-5386-6155-0
ISBN (Online):	978-1-5386-6154-3

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Thursday, September 20

Thursday, September 20 9:00 - 9:15

Open: Opening Remarks

Thursday, September 20 9:15 - 9:45

K1: Keynote Talk 1

Building a Large Scale Network around Automation!

Chair: Deepak Kataria (HCL, USA)

Gulrukh Ahanger, Comcast

Thursday, September 20 9:45 - 10:25

I1: Invited Talks 1

Chair: Deepak Kataria (HCL, USA)

Ayon Chakraborty: SkyLITE: End-to-End Design of Low-altitude UAV Networks for Providing LTE Connectivity

Yao Wang: 360 degree on-demand video streaming

Thursday, September 20 10:40 - 12:00

I2: Invited Talks 2

Chair: Deepak Kataria (HCL, USA)

Marina Thottan: Network Automation - the Next Big Innovation

Mohammad Alizadeh: Towards Network Systems that Improve with Experience

Carlee Joe-Wong: Towards Automated Network Management: Learning Optimal Network Policies

Ken Birman: Building Smart Memories and Responsive Edge Services with Derecho

Thursday, September 20 1:00 - 1:30

K2: Keynote Talk 2

Chair: Deepak Kataria (HCL, USA)

Oliver Spatscheck, AT&T

Thursday, September 20 1:30 - 2:30

I3: Invited Talks 3

Chair: Deepak Kataria (HCL, USA)

Ivan Seskar: missing bio and talk title Ganesh Ananthanarayanan: Live Video Analytics - the "killer app" for edge computing! Gil Zussman, Columbia University: Hybrid scheduling in heterogeneous half- and full-duplex wireless networks

Thursday, September 20 3:45 - 4:30

P1: Posters and Demos

Thursday, September 20 3:45 - 5:00

T2: Security and Privacy

Chair: Qiang Tang (New Jersey Institute of Technology, USA)

Scalable Computing in a Blockchain.....1

Mahalingam Ramkumar (Mississippi State University, USA)

Immutability measure for different blockchain structures.....7

Hyong Kim and Ke Wang (Carnegie Mellon University, USA)

Security Aware Spatial Modulation (SA-SM).....13

Monette Khadr (University at Albany, SUNY, USA); Hany Elgala (University at Albany, SUNY & NSF Lighting Enabled Systems and Applications ERC, USA); Moussa Ayyash (CSU, USA); Thomas DC Little (Boston University & NSF Smart Lighting ERC, USA); Abdallah A Khreishah (New Jersey Institute of Technology, USA); Michael Rahaim (University of Massachusetts Boston, USA)

A Sliding Window Based Monitoring Scheme to Detect and Prevent DDoS Attack in Data Center Networks in a Dynamic Traffic Environment...19

Mirza Mohd Shahriar Maswood and Md Mainul Islam Mamun (University of Missouri-Kansas City, USA); Dijiang Huang (Arizona State University, USA); Deep Medhi (University of Missouri-Kansas City, USA)

Modern Network Security Practices: Using Rainbow Tables to Solve Organizational Issues.....25

Christopher McMahon (College of Staten Island, USA); Xiaowen Zhang (College of Staten Island / CUNY & Graduate Center / CUNY, USA)

Thursday, September 20 5:00 - 6:00

T3: Communication QoS, Reliability & Modeling

Chair: Xiaowen Zhang (College of Staten Island / CUNY & Graduate Center / CUNY, USA)

Understanding User Perceived Video Quality using Multipath TCP over Wireless Network.....30

Sohee Park (Stony Brook University, USA); Arani Bhattacharya (Stony Brook University, USA & SUNY Korea, Korea); Mallesham Dasari and Samir R. Das (Stony Brook University, USA)

Age of Information Upon Decisions.....36

Yunqian Dong (Nanjing University of Information Science and Technology, P.R. China); Zhengchuan Chen (Chongqing University, P.R. China); Shanyun Liu and Pingyi Fan (Tsinghua University, P.R. China)

Network Optimization for Differentiated QoS Traffic in an SDN Environment for PoP-Data Center Traffic.....41

Mirza Mohd Shahriar Maswood, Rohit Abhishek and Deep Medhi (University of Missouri-Kansas City, USA)

Efficient Deployment of UAVs for Maximum Wireless Coverage using Genetic Algorithm.....47

Guanxiong Liu, Hazim Shakhatreh and Abdallah A Khreishah (New Jersey Institute of Technology, USA); Xiwang Guo (None, USA); Nirwan Ansari (New Jersey Institute of Technology, USA)

Friday, September 21

Friday, September 21 9:00 - 9:30

K3: Keynote Talk 3

Arbitrum: Scalable, Private Smart Contracts

Chair: Guiling Wang (New Jersey Institute of Technology, USA)

Prof. Edward W. Felten, Princeton University

Friday, September 21 9:30 - 10:30

I4: Invited Talks 4

Chair: Guiling Wang (New Jersey Institute of Technology, USA)

Venkatesh Krishnaswamy: Business-to-Consumer Communications in the era of AI Chuanyi Ji: Learning and large-scale data analytics for resilience of energy infrastructure at edge Maria Gorlatova: Towards Intelligence on the Edge: Restructuring Computing to Enable the Next Generation of the IoT

Friday, September 21 10:45 - 12:05

I5: Invited Talks 5

Chair: Guiling Wang (New Jersey Institute of Technology, USA)

Nazmul Islam: Multi-beam aspects of 5G standard Bob Gazda: Edge Computing in Emerging 5G Networks Padmanabhan S Pillai: A Race to the Edge Hongqiang "Harry" Liu: High Speed Overlay Networking for Containers

Friday, September 21 1:05 - 1:35

K4: Keynote Talk 4

5G and Edge Cloud evolution drive Industrial Innovation

Chair: Guiling Wang (New Jersey Institute of Technology, USA)

Sree Koratala, Ericsson.

Friday, September 21 1:35 - 2:35

I6: Invited Talks 6

Chair: Guiling Wang (New Jersey Institute of Technology, USA)

Mark T Watts: mmWave Deployment Challenges, a Carrier's Perspective Sameer Sharma: A Cloud Native Approach to Network Slicing Abhimanyu Gosain: Platforms for Advanced Wireless Research : Helping Define a New Edge Computing Paradigm

Friday, September 21 2:30 - 3:30

T1: Machine Learning and Deep Learning

Chair: Hai Phan (New Jersey Institute of Technology, USA)

The Tail Distribution of the Sum of Kappa Random Variables with Unequal Weight and Correlation.....53

Hung-Yi Lo and Jim Lehnert (Purdue University, USA); Phuong Tran (Ton Duc Thang University, Vietnam)

Shannon-Entropy-Based Artificial Intelligence Applied To Identify Social Anomalies in Large Latin American Cities.....58

Huber Nieto-Chaupis (Universidad de Ciencias y Humanidades & Center of Research eHealth, Peru)

Evacuating Routes in Indoor-Fire Scenarios with Selection of Safe Exits on Known and Unknown Buildings using Machine Learning.....62

Aakanksha Agnihotri, Sina Fathi Kazerooni, Yagiz Kaymak and Roberto Rojas-Cessa (New Jersey Institute of Technology, USA)

Visible Light Communication Using Deep Learning Techniques.....68

Priti Pachpande (University at Albany, USA); Monette Khadr (University at Albany, SUNY, USA); Ahmed Hussein (State University of New York at Albany, USA); Hany Elgala (University at Albany, SUNY & NSF Lighting Enabled Systems and Applications ERC, USA)

Friday, September 21 2:35 - 3:20

T4: Optical Networks and Systems

Chair: Deepak Kataria (HCL, USA)

Delayed Wavelength Switching and Allocation in Optical Networks.....74

Pegah Afsharlar, Jeremy M. Plante, Arash Deylamsalehi and Vinod M. Vokkarane (University of Massachusetts Lowell, USA)

Co-Scheduling Scientific Workflows in Elastic Optical Networks.....80

[Anisha Joseph](#) and Jeremy M. Plante (University of Massachusetts Lowell, USA); Juzi Zhao (San Jose State University, USA); Vinod M. Vokkarane (University of Massachusetts Lowell, USA)

Resolving Routing and Spectrum Allocation with Optimal Revenue Problem in Spectrum-Sliced Elastic Optical Path Networks.....86

Yang Wang and Hung Nguyen (La Salle University, USA); Chaoyang Li (Oakland University, USA)

Friday, September 21 3:35 - 4:35

T5: Resource Allocation and Wireless Applications

Chair: Cong Wang (NJIT, USA)

An Autonomous Simultaneous Localization and Mapping Walker for Indoor Navigation.....91

Priyank Kashyap, [Mahmoud Saleh](#), Denisolt Shakhbulatov and Ziqian (Cecilia) Dong (New York Institute of Technology, USA)

Implementation of a Cost Effective Gas Pipeline Monitoring System for Water Ingress Detection.....97

[Ishaan Gupta](#), Srivathsan Chakaravarthi Narasimman, Sugunakar Ravula and Justin Dauwels (Nanyang Technological University, Singapore); Abhishek Ukil (University of Auckland, New Zealand)

iNaaS: Indoors Navigation as a Service on the Cloud and Smartphone Application.....103

[Euripides G.M. Petrakis](#) and Panagiotis Konstantopoulos (Technical University of Crete (TUC), Greece); Stelios Sotiriadis (Birkbeck, University of London London, UK)

Placing Multiple Drone Base Stations in Hotspots.....109

Shuai Zhang (New Jersey Institute of Technology, USA); Xiang Sun (University of New Mexico, USA); Nirwan Ansari (New Jersey Institute of Technology, USA)

Friday, September 21 4:35 - 5:50

T6: Wireless Communications

Chair: Jing Li (NJIT, USA)

A Pre-Coding Technique to Mitigate PAPR in MIMO-OFDM Systems.....115

[Tahreer Mahmood](#) (Electrical/Computer Engineering & University of Arkansas at Little Rock USA, USA); Seshadri Mohan (University of Arkansas at Little Rock, USA)

Performance Analysis for HF Communication with Dominant Noise Source.....121

Hung-Yi Lo and Jim Lehnert (Purdue University, USA); Phuong Tran (Ton Duc Thang University, Vietnam)

Frequency Assignment for JALN HCB.....127

Peng Wang (NRC PostDoc, USA); Brian Henz (US Army Research Laboratory, USA)

Utilizing Spectral Level Crossings: An Example Signal-to-Noise Ratio Estimator.....133

[William Clark, IV](#) and Joseph M. Ernst (Virginia Tech, USA); Robert McGwier (Virginia Tech & Allied Communications, AMSAT, and Flex Radio System, Inc., USA)

OpenFlow Experimenter Labels for Encoding Adaptive Network Functions.....139

Venkateswara Dasari and Nikolai Snow (US Army Research Laboratory, USA); Billy Geerhart iii (Army Research Laboratory, USA)

Friday, September 21 5:50 - 6:00

Close: Closing Remarks