

# 35th IEEE Sarnoff Symposium 2012 Program

**Monday, May 21**

## OPENING AND WELCOME MESSAGE (8:30am – 8:49am at BALLROOM A)

Joel S. Bloom, Ph.D. (President, NJIT)

## KEYNOTE1 (8:50am – 9:49am at BALLROOM A)

*Cyber Security Defense: Challenges & State of the Art*

Parag Pruthi, Ph.D. (Founder, Chairman, and CEO, Nixsun)

## INVITED1: Future Internet I (10:05am – 12:09pm at ROOM 215)

**Session Chair: Shweta Jain (York College, CUNY, USA)**

*Measuring and Quantifying the Silent Majority on the Internet*

Mukundan Venkataraman (Stevens Institute of Technology, USA); Koduvayur Subbalakshmi (Stevens Institute Of Technology, USA); Rajarathnam Chandramouli (Stevens Institute of Technology, USA)

*Content Delivery in the MobilityFirst Future Internet Architecture*

Feixiong Zhang (Rutgers University & WINLAB, USA); Kiran Nagaraja (Rutgers University, USA); Yanyong Zhang (Rutgers University, USA); Dipankar Raychaudhuri (Rutgers University, USA)

*Securing the Mobile Enterprise with Network-Based Security and Cloud Computing*

Gustavo de los Reyes (AT&T Security Research Center, USA); Sanjay Macwan (AT&T, USA); Deepak Chawla (AT&T Security Research Center, USA); Cristina Serban (AT&T Security Research Center, USA)

*Catching the Wily Hacker: A Multilayer Deception System*

Wei Wang (AT&T Security Research Center, USA); Jeffrey Bickford (AT&T, USA); Ilona Murynets (AT&T Security Research Center, USA); Ramesh Subbaraman (AT&T, USA); Andrea G. Forte (AT&T, USA); Gokul Singaraju (AT&T, USA)

*Wireless Multi-hop Network Topology Control Optimization and Trade-off Analysis*

Eleni G Stai (National Technical University of Athens / Institute of Com. and Computer Syst., Greece); Vasileios A Karyotis (National Technical University of Athens, Greece); Symeon Papavassiliou (Institute of Comm. and Comp. Systems/National Technical University of Athens, Greece)

## S1: WIRELESS NETWORKS I (10:05am – 12:09pm at ROOM 220)

**Session Chair: Elias Kpodzo (L-3 Communications TE, USA)**

*Performance Evaluation of Flexible TDD Switching in 3GPP LTE System*

Yufeng Wang (University of South Florida, USA); Kimmo Valkealahti (Nokia Research Center, Finland); Ravi Sankar (University of South Florida, USA); Salvatore Morgera (Florida Atlantic University, USA)

### *The Impact of Transmission Errors in MAC Schemes for Distributed Wireless Networks*

António Furtado (Universidade Nova de Lisboa / UNINOVA, Portugal); Rodolfo Oliveira (Universidade Nova de Lisboa/Uninova, Portugal); Miguel Luís (Universidade Nova de Lisboa, Portugal); Rui Dinis (Instituto de Telecomunicações/UNINOVA/FCT-UNL, Portugal); Luis Bernardo (Universidade Nova de Lisboa, Portugal); Paulo Montezuma (FCT-UNL, Portugal)

### *Estimation of Spectrum Occupancy in Heterogeneous Radio Access Environments using Random Spectral Sampling*

Sean Rocke (Worcester Polytechnic Institute, USA); Alexander M. Wyglinski (Worcester Polytechnic Institute, USA)

## **S2: WIRELESS COMMUNICATIONS I (10:05am – 12:09pm at ROOM 225)**

### **Session Chair: Silvija Kokalj-Filipović (Bell Labs, Alcatel-Lucent, USA)**

#### *Capacity of Communications Channels with 1-Bit Quantization and Oversampling at the Receiver*

Stefan Krone (TU Dresden, Germany); Gerhard Fettweis (Technische Universität Dresden, Germany)

#### *A Low Complexity Scheme for Joint Channel Estimation and PAPR Reduction Technique*

Youssef Nasser (American University of Beirut, Lebanon); Ralph Mounzer (INSA-Rennes, France); Jean-François Héland (IETR, France)

#### *Performance of Discrete Wavelet Transform-Based Deconvolution Applied to Multipath Channel Estimation*

Canute Vaz (Robertson Technologies, USA); David G. Daut (Rutgers University, USA)

#### *Feedback Information and Energy Efficiency of MIMO Transmission Modes in LTE*

Olayinka Adigun (Kingston University, United Kingdom); Christos Politis (Kingston University, United Kingdom)

## **T1: TUTORIAL (10:05am – 12:09pm at ROOM 230)**

### **Tutorial Chair: Aleksandar Kolarov (Telcordia, USA)**

#### *LTE and LTE Advanced Rollout – Opportunities & Challenges*

Deepak Kataria, (IP Junction Inc., USA)

## **S3: NETWORKING I (1:40pm – 3:20pm at ROOM 215)**

### **Session Chair: Andrea Francini (Bell Labs, Alcatel-Lucent, USA)**

#### *A Framework for Evaluating Network Optimization Techniques*

Ossama Younis (Applied Communication Sciences, USA); Andrei Ghetie (Telcordia, USA); Sharanya Eswaran (Telcordia Technologies, USA); Noam Goldberg (Technion, Israel); Sunil Samtani (Telcordia Technologies Inc., USA); Maneesh Varshney (Scalable Network Technologies, Inc., USA); Mitesh Patel (US Army CERDEC STCD, USA)

#### *Impact of Network Structure on Latency in Complex Networks*

Ziping Hu (The University of Oklahoma, USA); Pramode K. Verma (The University of Oklahoma, USA)

#### *Ask, Don't Search: A Social Help Engine for Online Social Network Mobile Users*

Tam Vu (Rutgers University, USA); Akash Baid (WINLAB, Rutgers University, USA)

## **T2: TUTORIAL (1:40pm – 3:20pm at ROOM 220)**

**Tutorial Chair: Aleksandar Kolarov (Telcordia, USA)**

### *Introduction to TV White Space Radio*

Anthony Triolo (Applied Communication Sciences, USA)

## **S4: WIRELESS COMMUNICATIONS II (1:40pm – 3:20pm at ROOM 230)**

**Session Chair: Walid Ahmed (Broadcom Inc., USA)**

### *Location Aided Carrier Frequency Offset Estimation for Uplink OFDMA Systems*

Youssef Nasser (American University of Beirut, Lebanon); Hassan Merhe (American University of Beirut, Lebanon); Maryline H elard (INSA Rennes & IETR Institute of Electronics and Telecommunications of Rennes, France)

### *Digital Pre-distortion of Power Amplifier Impairments in Spectrally Agile Transmissions*

Zhu Fu (Worcester Polytechnic Institute, USA); Lauri Anttila (Tampere University of Technology, Finland); Mikko Valkama (Tampere University of Technology, Finland); Alexander M. Wyglinski (Worcester Polytechnic Institute, USA)

## **P1: INDUSTRY PANEL (1:40pm – 3:20pm at ROOM 235)**

**Panel Chair: Eric Addeo ( DeVry University, USA)**

### *Telemedicine*

Deborah Helman ( DeVry University, USA); Dewi S. Sudjono-Santoso (University of Medicine and Dentistry of New Jersey, USA); N. Iwan Santoso ( DeVry University, USA)

## **S5: NETWORKING II (3:45pm – 5:25pm at ROOM 215)**

**Session Chair: Ashutosh Dutta (NIKSUN, USA)**

### *Detecting Covert Channels Within VoIP*

Hong (Hannah) Zhao (Fairleigh Dickinson University, USA); Nirwan Ansari (NJIT, USA)

### *MCS: Buffered Clos-Network Switch with In-Sequence Packet Forwarding*

Ziqian Dong (New York Institute of Technology, USA); Roberto Rojas-Cessa (New Jersey Institute of Technology, USA)

### *Flexible and Robust Video Delivery Based on Self-Contained Multimedia Segments*

Raziel Haimi-Cohen (Alcatel-Lucent, Bell-Laboratories, USA); John Hearn (Alcatel-Lucent, Bell-Laboratories, USA); Michael Scheutzow (Alcatel-Lucent, Bell-Laboratories, USA); Eric Levy (Alcatel-Lucent, Bell-Laboratories, USA); Les Wu (Alcatel-Lucent, Bell-Laboratories, USA); Paul Wilford (Bell Labs, USA); Dorel Livescu (Alcatel-Lucent, Bell-Laboratories, USA)

### *Location-constrained Survivable Network Virtualization*

Qian Hu (Georgia State University, USA); Yang Wang (Georgia State University, USA); Xiaojun Cao (Georgia State University, USA)

## **S6: WIRELESS AD HOC AND SENSOR NETWORKS I (3:45pm – 5:25pm at ROOM 220)**

**Session Chair: Osvaldo Simeone (New Jersey Institute of Technology, USA)**

### *Instantaneous Rate Based Cooperative MAC Protocol for Wireless Ad hoc Networks*

Murad Khalid (USF, USA); Yufeng Wang (University of South Florida, USA); Inho Ra (Kunsan National University, Korea); Ravi Sankar (University of South Florida, USA)

### *A QoS Based Cooperative Spectrum Utilization in Cognitive Radio Networks*

G. Selda Uyanik (Istanbul Technical University, Turkey); Sema Oktug (Istanbul Technical University, Turkey)

### *Parallel Multi-channel Detection: A Practical Solution to Energy Detection of Heterogeneous Wideband Spectrum*

Oluwatobi O Olabiyi (Prairie View A&M University, USA); Annamalai Annamalai (Prairie View A&M University, USA)

## **S7: WIRELESS MIMO SYSTEMS (3:45pm – 5:25pm at ROOM 225)**

**Session Chair: Frank O'Brien (IEEE/CSI, USA)**

### *A Simple Slicer For Soft Detection In Gray-Coded QAM-Modulated MIMO OFDM Systems*

Chun Kin Au Yeung (Samsung US R&D Center, USA); Jungwon Lee (Samsung US R&D Center, USA); Sungsoo Kim (Samsung Electronics Co., Ltd, Korea)

### *On the Pareto Optimum of Long-Term Max-Min Beamforming with General Power Constraints*

Guido Dartmann (RWTH Aachen University, Germany); Xitao Gong (RWTH Aachen University, Germany); Gerd H. Ascheid (RWTH Aachen University, Germany)

### *Outage Performance of MIMO Two-Way AF Relaying with End-to-End Antenna Selection*

Prabhat Kumar Upadhyay (Birla Institute of Technology, Mesra, India); Shankar Prakriya (Indian Institute of Technology, Delhi, India)

### *Rate Adaptation for Interference Cancellation Receivers in Slowly Time-Variant MIMO Channels*

Eckhard Ohlmer (Technische Universität Dresden, Germany); Gerhard Fettweis (Technische Universität Dresden, Germany)

## **T3: Tutorial (3:45pm – 5:25pm at ROOM 230)**

**Tutorial Chair: Aleksandar Kolarov (Telcordia, USA)**

### *Theory and Applications of Complex Evolving Networks (TACENet)*

Symeon Papavassiliou (National Technical University of Athens, Greece)

## **KEYNOTE2 (7:15pm – 8:14pm at BALLROOM A)**

### *Interference Cancellation Systems (ICS) in a Saturated Electromagnetic Spectrum in Tactical Applications*

Robert G. Holland, Ph.D. (Vice President of Engineering, L-3 Communications, Telemetry East)

## Tuesday, May 22

### INVITED2: Future Internet II (8:30am – 10:29am at ROOM 215)

**Session Chair: Ziqian Dong (New York Institute of Technology, USA)**

#### *Active Queue Management With Variable Bottleneck Rate*

Andrea Francini (Bell Labs, Alcatel-Lucent, USA)

#### *An MDP Framework for Centralized Dynamic Spectrum Auction*

Juan Jose Alcaraz (Universidad Politécnica de Cartagena, Spain); Mario López-Martínez (Technical University of Cartagena, Spain); Javier Vales-Alonso (Universidad Politécnica de Cartagena, Spain); Joan Garcia-Haro (Technical University of Cartagena, Spain)

#### *Roadside Infrastructure Planning for Vehicle Trajectory Collection*

Tan Yan (New Jersey Institute of Technology, USA); Guiling Wang (New Jersey Institute of Technology, USA)

#### *Wireless Access Considerations for the MobilityFirst Future Internet Architecture*

Akash Baid (WINLAB, Rutgers University, USA); Dipankar Raychaudhuri (Rutgers University, USA)

#### *Energy Harvesting Two-hop Networks: Optimal Policies for the Multi-Energy Arrival Case*

Oner Orhan (Polytechnic Institute of NYU, USA); Elza Erkip (Polytechnic Institute of NYU, USA)

### S8: NETWORKING III (8:30am – 10:29am at ROOM 220)

**Session Chair: Symeon Papavassiliou (Institute of Comm. and Comp. Systems/National Technical University of Athens, Greece)**

#### *HyScaleII: A High Performance Hybrid Optical Network Architecture for Data Centers*

Shivashis Saha (University of Nebraska-Lincoln, USA); Jitender Singh Deogun (University of Nebraska-Lincoln, USA); Lisong Xu (University of Nebraska-Lincoln, USA)

#### *Evaluation of Switching Performance of a Virtual Software Router*

Roberto Rojas-Cessa (New Jersey Institute of Technology, USA); Khondaker M. Salehin (New Jersey Institute of Technology, USA); Komlan Egoh (New Jersey Institute of Technology, USA)

#### *Measuring Video Quality Degradation Using Face Detection*

Bengi Karacali (Avaya Labs, USA); Anjur S Krishnakumar (Avaya Labs, USA)

#### *NEXT Utility Ethernet Network Architecture*

Tom R Janca (Utility Ethernet Forum & Saguaro Utility Networks, USA)

### S9: WIRELESS NETWORKS II (8:30am – 10:29am at ROOM 225)

**Session Chair: Elias Kpodzo (L-3 Communications TE, USA)**

#### *Low power consumption Intelligent Local Avoided Collision (iLAC) MAC protocol for WLAN*

Hieu C Dinh (Waseda University, Japan); Tuan Le (Authority of Radio Frequency Management, Vietnam); Thanh Hieu Nguyen (Vietnam National University, Vietnam); Shigeru Shimamoto (Waseda University & Graduate School of Global Information and Telecommunication Studies, Japan); Akeo Masuda (NTT, Japan); Verotiana Rabarijaona (Waseda University, Japan)

*MoCCA: A Mobile Cellular Cloud Architecture*

Amitabh Mishra (Johns Hopkins University, USA)

*Performance Comparison of Dual-Cell HSDPA and Long Term Evolution in Macro Cellular Network*

Muhammad Usman Sheikh (Tampere University of Technology, Finland); Jukka Lempiäinen (Tampere University of Technology, Finland)

*Energy-Conscious Prototype for Enabling Multi-Protocol Wireless Communications*

Travis Collins (Worcester Polytechnic Institute, USA); Patrick Desantis (Worcester Polytechnic Institute, USA); David Vecchiarelli (Worcester Polytechnic Institute, USA); Alexander M. Wyglinski (Worcester Polytechnic Institute, USA); Sean McGrath (University of Limerick, Ireland)

**S10: WIRELESS COMMUNICATIONS III (8:30am – 10:29am at ROOM 230)**

**Session Chair: Osvaldo Simeone (New Jersey Institute of Technology, USA)**

*Combining LT codes and XOR network coding for reliable and energy efficient transmissions in wireless sensor networks*

Anya Apavatjrut (Chiang Mai University, Thailand); Katia Jaffrès-Runser (University of Toulouse, France); Claire Goursaud (INSA-Lyon, France); Jean-Marie Gorce (INSA-Lyon, France)

*Low Complexity Fair Queueing Driven Wireless Multi-user Scheduler*

Wei Pu (State University of New York at Buffalo, USA); Chang Wen Chen (State University of New York at Buffalo, USA)

*Dynamic Frequency Allocation Scheme for a Standalone Wireless Access Point*

Osama Abu-Sharkh (Princess Sumaya University For Technology, Jordan); Raad Qandah (Princess Sumaya University For Technology, Jordan); Mohammad Baba (Princess Sumaya University For Technology, Jordan); Mohammad Sabah (Princess Sumaya University For Technology, Jordan)

**T4: TUTORIAL (8:30am – 10:29am at ROOM 235)**

**Tutorial Chair: Aleksandar Kolarov (Telcordia, USA)**

*Machine-to-machine Communications and Internet of Things: What is behind the industry momentum? An in depth view of applications, architecture, and standards*

Harish Viswanathan (Alcatel-Lucent, Bell Labs, USA)

**S11: WIRELESS AD HOC AND SENSOR NETWORKS II (10:45am – 12:54pm at ROOM 215)**

**Session Chair: Walid Ahmed (Broadcom Inc., USA)**

*Metrics for performance evaluation of self-positioning autonomous MANET nodes*

Janusz Kusyk (The Graduate Center, The City University of New York, USA); Jianmin Zou (The City College of the City University of New York, USA); Stephen Gundry (The City College of the City University of New York, USA); Cem Safak Sahin (BAE Systems, USA); M. Umit Uyar (City College of The City University of New York, USA)

*A Cluster-based Hybrid Access Protocol for Wireless Sensor Networks*

Min Zhang (Auburn University, USA); Alireza Babaei (Auburn University, USA); Prathima Agrawal (Auburn University, USA)

*Markov Chain Model for Differential Evolution Based Topology Control in MANETs*

Stephen Gundry (The City College of the City University of New York, USA); Jianmin Zou (The City College of the City University of New York, USA); Janusz Kusyk (The Graduate Center, The City University of New York, USA); Cem Safak Sahin (BAE Systems, USA); M. Umit Uyar (City College of The City University of New York, USA)

*A Cross-Layer MAC/PHY Framework for PER Guarantee in Multiuser Detection Based Ad Hoc Networks*

P. Justin Kouraogo (Ecole de Technologie Supérieure University of Québec at Montréal, Canada); Zbigniew Dziong (École de technologie supérieure, University of Quebec, Canada); Mohamad Haidar (Ecole de Technologie Supérieure, Canada); Francois Gagnon (Ecole de Technologie Supérieure, Canada)

**S12: COMMUNICATION AND NETWORK SECURITY (10:45am – 12:54pm at ROOM 220)**

**Session Chair: Frank O'Brien (IEEE/CSI, USA)**

*Introducing Soft Verification as an Improvement of Hard Verification of Cryptographic Check Values*

Natasa Zivic (University of Siegen, Germany)

*Identity Based Partial Aggregate Signature Scheme Without Pairing*

Sree Vivek (Indian Institute of Technology Madras, India); Sharmila Deva Selvi (IIT Madras, India); Shriram J (National Institute of Technology, Trichy, India); Pandu Rangan C (IIT Madras, India)

*Attack Detection in Water Supply Systems using Kalman Filter Estimator*

Kebina Manandhar (Georgia State University, USA); Xiaojun Cao (Georgia State University, USA); Fei Hu (University of Alabama, USA)

*Secure & Trusted Communication in Emergency Situations*

Antonis Michalas (Aalborg University Center for TeleInfrastructure (CTIF), Denmark); Menelaos Bakopoulos (Athens Information Technology, Greece); Nikos Komninos (University of Pireaus, Greece); Neeli Rashmi Prasad (Center for TeleInfrastructure (CTIF), Denmark)

**P2: INDUSTRY PANEL (10:45am – 12:54pm at ROOM 235)**

**Panel Chair: Alex Habib (Custom Automation, USA)**

*Industrial communication Networks on the Plant Floor*

Josh Davies (Control Associates, Inc, USA); Andres Gomez (Rockwell Automation, USA); Richard W. Pranke (Bristol-Myers Squibb, USA)

**T5: TUTORIAL (10:45am – 12:54pm at ROOM 230)**

**Tutorial Chair: Aleksandar Kolarov (Telcordia, USA)**

*Design Issues in Time-Driven Wireless Sensor Networks*

Sebastia Galmes (University of Balearic Islands, Spain)

**STUDENT POSTER SESSION (10:15am – 12:54pm at BALLROOM A)**

**Session Chair: Ziqian Dong (New York Institute of Technology, USA)**

### **KEYNOTE3 (1:15pm – 2:14pm at BALLROOM A)**

#### *Technologies for Smarter Wireless Networks*

Kang-Won Lee, Ph.D. (Manager, Wireless Networking Department, IBM T. J. Watson Research Center)  
Seraphin Calo, Ph.D. (Manager, Policy Technologies Department, IBM T. J. Watson Research Center)

### **S13: WIRELESS AD HOC AND SENSOR NETWORKS III (2:30pm – 4:10pm at ROOM 215)**

#### **Session Chair: Wieslaw Bury (DeVry University, USA)**

#### *Capacity-Interference Investigation in Cognitive Radio Networks with Beacon*

Farnaz Shayegh (Concordia University, Canada); M. Reza Soleymani (Concordia University, Canada)

#### *Analysis and New Implementations of Periodogram-based Spectrum Sensing*

Oluwatobi O Olabiyi (Prairie View A&M University, USA); Annamalai Annamalai (Prairie View A&M University, USA)

#### *Wide-band Spectrum Sensing Using Neighbor Orthogonal Matching Pursuit*

Lei Zhou (Stevens Institute of Technology, USA); Hong Man (Stevens Institute of Technology, USA)

#### *On the Noise Power Estimation in the Presence of the Signal for Energy-Based Sensing*

Samson Sequeira (Rutgers University & WINLAB, Rutgers University, USA); Rajas R. Mahajan (Rutgers University, USA); Predrag Spasojević (Rutgers University, USA)

### **S14: WIRELESS AND CODING (2:30pm – 4:10pm at ROOM 220)**

#### **Session Chair: Silvija Kokalj-Filipović (Bell Labs, Alcatel-Lucent, USA)**

#### *Particle Swarm Optimization based Topology Control Mechanism for Holonomic Unmanned Vehicles Operating in Three-dimensional Space*

Jianmin Zou (The City College of the City University of New York, USA); Stephen Gundry (The City College of the City University of New York, USA); Janusz Kusyk (The Graduate Center, The City University of New York, USA); Cem Safak Sahin (BAE Systems, USA); M. Umit Uyar (City College of The City University of New York, USA)

#### *On Coding Efficiency for Flash Memories*

Xudong Ma (University of Waterloo, Canada)

#### *On the Delay Performance of Block Codes for Discrete Memoryless Channels with Feedback*

Lübben Ralf (Leibniz University of Hannover, Germany); Markus H Fidler (Leibniz Universität Hannover, Germany)

#### *Performance of Permutation Trellis Codes in Cognitive Radio Networks*

Raghd El Bardan (Syracuse University, USA); Engin Masazade (Syracuse University, USA); Onur Ozdemir (Andro Computational Solutions, USA); Pramod Varshney (Syracuse University, USA)



**T6: TUTORIAL (2:30pm – 4:10pm at ROOM 225)**

**Tutorial Chair: Aleksandar Kolarov (Telcordia, USA)**

*Secure Authentication Service: IBM's internal solution for delivering secure device admission to the network focusing on Mobile devices*

Drew Wyskida (IBM Research, USA)