

2017 14th Annual IEEE International Conference on Sensing, Communication, and Networking (SECON 2017)

**San Diego, California, USA
12-14 June 2017**



**IEEE Catalog Number: CFP17SCN-POD
ISBN: 978-1-5090-6600-1**

**Copyright © 2017 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:	CFP17SCN-POD
ISBN (Print-On-Demand):	978-1-5090-6600-1
ISBN (Online):	978-1-5090-6599-8
ISSN:	2155-5486

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

IEEE SECON 2017 TABLE OF CONTENTS

COMMITTEES	iii
PATRONS	viii
KEYNOTES	ix
PROGRAM	xii

Technical Papers

SESSION A: Mobile Sensing Applications

VibSense: Sensing Touches on Ubiquitous Surfaces through Vibration	1
<i>Jian Liu, Yingying Chen, Marco Gruteser, and Yan Wang</i>	
MagnoPark - Locating On-Street Parking Spaces Using Magnetometer-Based Pedestrians' Smartphones	10
<i>Maryam Arab and Tamer Nadeem</i>	
Roadview: Live View of On-Road Vehicular Information	19
<i>Gopi Krishna Tummala, Dong Li, and Prasun Sinha</i>	
PreSight: Enabling Real-Time Detection of Accessibility Problems on Sidewalks	28
<i>Zheng Li, Mahbubur Rahman, Ryan Robucci, and Nilanjan Banerjee</i>	

SESSION B: RFID Sensing

HMRL: Relative Localization of RFID Tags with Static Devices	37
<i>Ge Wang, Chen Qian, Longfei Shanguan, Han Ding, Jinsong Han, Nan Yang, Wei Xi, and Jizhong Zhao</i>	
Dynamic Grouping in RFID Systems	46
<i>Feng Zhu, Bin Xiao, Jia Liu, Yanyan Wang, and Li-jun Chen</i>	
3-Dimensional Reconstruction on Tagged Packages via RFID Systems	55
<i>Yanling Bu, Lei Xie, Jia Liu, Bingbing He, Yinyin Gong, and Sanglu Lu</i>	
Efficient Tag Identification in Blocker-Assisted RFID Systems	64
<i>Yanyan Wang, Jia Liu, Xia Wang, Feng Zhu, and Lijun Chen</i>	

SESSION C: Security and Privacy I

Distributed Privacy-Protecting Routing in DTN: Concealing the Information Indispensable in Routing	73
<i>Kang Chen and Haiying Shen</i>	
Privacy-Preserving Fraud Detection via Cooperative Mobile Carriers with Improved Accuracy	82
<i>Wenyan Yao, Na Ruan, Feifan Yu, Weijia Jia, and Haojin Zhu</i>	
Beyond K-Anonymity: Protect Your Trajectory from Semantic Attack	91
<i>Zhen Tu, Kai Zhao, Fengli Xu, Yong Li, Li Su, and Depeng Jin</i>	

SESSION D: Wireless Video Delivery

InfRA: Interference-Aware PHY/FEC Rate Adaptation for Video Multicast over WLAN	100
<i>Yeonchul Shin, Gyujin Lee, Junyoung Choi, Jonghoe Koo, Sung-Ju Lee, and Sunghyun Choi</i>	
Motion-Prediction-Based Multicast for 360-Degree Video Transmissions	109
<i>Yanan Bao, Tianxiao Zhang, Amit Pande, Huasen Wu, and Xin Liu</i>	
Joint Upload-Download TCP Acceleration over Mobile Data Networks	118
<i>Ke Liu, Vaneet Aggarwal, Ziyu Shao, and Mingyu Chen</i>	

SESSION E: Spectrum Efficiency

A Measurement Study of User-Induced Propagation Effects for UHF Frequency Bands	127
<i>Yan Shi, Eric Johnson, John Wensowitch, and Joseph Camp</i>	
Leveraging Frame Aggregation for Estimating WiFi Available Bandwidth	136
<i>Lixing Song and Aaron Striegel</i>	
Towards Crowdsourced Signal Map Construction via Implicit Interaction of IoT Devices	145
<i>Suining He and S.-H. Gary Chan</i>	
Bandwidth-Aware Data Filtering in Edge-Assisted Wireless Sensor Systems	154
<i>Igor Burago, Marco Levorato, and Aakanksha Chowdhery</i>	

SESSION F: Emerging Network Architectures

A Novel Joint Routing and Channel Allocation Approach in Hybrid Data Center Network	163
<i>Boutheina Dab, Ilhem Fajjari, and Nadjib Aitsaadi</i>	
Orchestrating the Data-Plane of Virtual LTE Core Networks	172
<i>Rajesh Mahindra, Arijit Banerjee, Karthik Sundaresan, Sneha Kasera, Jacobus Van Der Merwe, and Sampath Rangarajan</i>	
Coverage and Robustness of mm-Wave Urban Cellular Networks: Multi-Frequency HetNets Are the 5G Future	181
<i>Ljiljana Simic, Soumendra Panda, Janne Riihijarvi, and Petri Mahonen</i>	
Espresso: A Data Naming Service for Self-Summarizing Transport	190
<i>Jongdeog Lee, Md Tanvir Al Amin, and Tarek Abdelzaher</i>	

SESSION G: Energy Harvesting and Energy Efficient Protocols

Minimizing Data Distortion of Periodically Reporting IoT Devices with Energy Harvesting	199
<i>Chiara Pielli, Cedomir Stefanovic, Petar Popovski, and Michele Zorzi</i>	
CABLE: Connection Interval Adaptation for BLE in Dynamic Wireless Environments	208
<i>Taeseop Lee, Jonghun Han, Myung-Sup Lee, Hyung-Sin Kim, and Saewoong Bahk</i>	
Radiation Constrained Fair Wireless Charging	217
<i>Lanlan Li, Haipeng Dai, Guihai Chen, Jiaqi Zheng, Yang Zhao, and Pengxiang Zeng</i>	
Power Distribution Scheduling for Electric Vehicles in Wireless Power Transfer Systems	226
<i>Chenxi Qiu, Ankur Sarker, and Haiying Shen</i>	

SESSION H: Cross-Layer Wireless Network Design

RnR: Reverse & Replace Decoding for Collision Recovery in Wireless Sensor Networks	235
<i>Dali Ismail, Mahbubur Rahman, Abusayeed Saifullah, and Sanjay Madria</i>	
Distributed Real-Time Multimodal Data Forwarding in Unmanned Aerial Systems	244
<i>Zhichuan Huang and Ting Zhu</i>	
LiRa: A WLAN Architecture for Visible Light Communication with a Wi-Fi Uplink	253
<i>Sharan Naribole, Shuqing Chen, Ethan Heng, and Edward Knightly</i>	
Adaptive Pilot Design for Massive MIMO HetNets with Wireless Backhaul	262
<i>Mingjie Feng and Shiwen Mao</i>	

SESSION I: Security and Privacy II

Dodge-Jam: Anti-Jamming Technique for Low-Power and Lossy Wireless Networks	271
<i>Jeongyeon Heo, Jung-Jun Kim, Saewoong Bahk, and Jeongyeup Paek</i>	
PCASA: Proximity Based Continuous and Secure Authentication of Personal Devices	280
<i>Pengfei Hu, Parth H. Pathak, Yilin Shen, Hongxia Jin, and Prasant Mohapatra</i>	
STASH: Securing Transparent Authentication Schemes Using Prover-Side Proximity Verification	289
<i>Mika Juuti, Christian Vaas, Ivo Sluaganovic, Hans Liljestrand, N. Asokan, and Ivan Martinovic</i>	

SESSION J: Mobile Cloud Computing

Clockwork: Scheduling Cloud Requests in Mobile Applications	298
<i>Yanjiao Chen, Zixuan Yu, and Baochun Li</i>	
Serendipity of Sharing: Large-Scale Measurement and Analytics for Device-to-Device (D2D) Content Sharing in Mobile Social Networks	307
<i>Xiaofei Wang, Hui Wang, Keqiu Li, Shusen Yang, and Tianpeng Jiang</i>	
Resource and Execution Control for Mobile Offloadable Devices	316
<i>Torsten Zimmermann, Hanno Wirtz, Jan Henrik Ziegeldorf, Christian Steinhaus, and Klaus Wehrle</i>	

SESSION K: Scheduling in Sensor Networks

Revisiting Sensor MAC for Periodic Monitoring: Why Should Transmitters Be Early Birds?	325
<i>Daewoo Kim, Jinhwan Jung, Yoonpyo Koo, and Yung Yi</i>	
Gathering Information in Sensor Networks for Synchronized Freshness	334
<i>Elahe Vahdani, Amotz Bar-Noy, Matthew P. Johnson, and Tarek Abdelzaher</i>	
Reliable Stream Scheduling with Minimum Latency for Wireless Sensor Networks	343
<i>Hao-Tsung Yang, Kin Sum Liu, Jie Gao, Shan Lin, Sirajum Munir, Kamin Whitehouse, and John Stankovic</i>	
Performance Analysis and Tuning of Coexisting Duty Cycling WiFi and Wireless Sensor Networks	352
<i>Wei Zhang, Yuhang Zhou, Mahima A. Suresh, and Radu Stoleru</i>	

SESSION L: Mobile Crowd Sourcing

Prediction Based User Selection in Time-Sensitive Mobile CrowdSensing.....	361
<i>Wenbin Liu, Yongjian Yang, En Wang, Zengyi Han, and Xingbo Wang</i>	
Incentivizing the Biased Requesters: Truthful Task Assignment Mechanisms in Crowdsourcing.....	370
<i>Jia Xu, Hui Li, Yanxu Li, Dejun Yang, and Tao Li</i>	
Composite Task Selection with Heterogeneous Crowdsourcing	379
<i>Jianhui Zhang, Zhi Li, Xiaojun Lin, and Feilong Jiang</i>	
Auction Meets Queuing: Information-Driven Data Purchasing in Stochastic Mobile Crowd Sensing	388
<i>Chongyu Zhou, Chen-Khong Tham, and Mehul Motani</i>	
Share Brings Benefits: Towards Maximizing Revenue for Crowdsourced Mobile Network Access.....	397
<i>Yi Zhang, Yuan He, Jiliang Wang, Yanrong Kang, Daibo Liu, Bo Li, and Yunhao Liu</i>	

Posters and Demos

Posters

Poster Abstract: Spectral Efficient Cell Selection for LTE-Advanced's Network Densification	406
<i>Mncedisi Bembe, George Sibiya, and Youngnam Han</i>	
Poster Abstract: A Measurement Study of User-Induced Propagation Effects for UHF Frequency Bands.....	408
<i>Yan Shi, Eric Johnson, John Wensowitch, and Joseph Camp</i>	
Analyzing Head-Mounted AR Device Energy Consumption on a Frame Rate Perspective	410
<i>Jaewon Choi, Seonjoo Park, and JeongGil Ko</i>	

Demos

Demo Abstract: SonarBeat: Sonar Phase for Breathing Beat Monitoring with Smartphones	412
<i>Xuyu Wang, Runze Huang, and Shiwen Mao</i>	
iApollo: A Newsfeed Summary Service on NDN.....	414
<i>Jongdeog Lee, Daniel Xu, Md Tanvir Al Amin, and Tarek Abdelzaher</i>	
Demo Abstract: Implementing Prover-Side Proximity Verification for Strengthening Transparent Authentication	416
<i>Mika Juuti, Christian Vaas, Hans Liljestrand, Ivo Sluganovic, N. Asokan, and Ivan Martinovic</i>	
A WSN Testbed for Z-Order Encoding Based Multi-Modal Sensor Data Compression	418
<i>Xiaofei Cao, Sanjay Madria, and Takahiro Hara</i>	

AUTHOR INDEX	421
---------------------------	------------