Routing and Flow Optimization

A novel protocol for adaptive broadcasting of sensor data in urban scenarios
Jinseok Yang (University of California, San Diego, USA), Sameer S. Tilak (University of California at San Diego, USA), Tajana Simunic Rosing (UCSD, USA) ............................................. 1

LBcast: Load-Balanced Broadcast Scheduling for Low-Duty-Cycle Wireless Sensor Networks
Lijie Xu (Nanjing University, P.R. China), Guihai Chen (Shanghai Jiao Tong University, P.R. China) .......................................................... 7

Non-Asymptotic Multicast Throughput Capacity in Multi-Hop Wireless Networks
Jingjing Luo (Huazhong University of Science and Technology, P.R. China), Jinbei Zhang (Shanghai Jiao Tong University, P.R. China), Li Yu (Huazhong University of Science & Technology, P.R. China), Xining Wang (Shanghai Jiao Tong University, P.R. China) .......................................................... 13

Maximizing Number of Satisfiable Routing Requests in Static Ad Hoc Networks
Zane Sumpter (Wichita State University, USA), Lucas Burson (Wichita State University, USA), Bin Tang (California State University Dominguez Hills, USA), Xiao Chen (Texas State University, USA) .......................................................... 19

Modeling Ad Hoc Mobile Networks: the General k-Hop Relay Routing
Jiajia Liu (Xidian University, P.R. China), Hiroki Nishiyama (Tohoku University, Japan), Nei Kato (Tohoku University, Japan), Tomoaki Kumagai (NTT Corporation, Japan), Atsushi Takahara (NTT, Japan) .......................................................... 25

VANET Management and Applications

VANET Based Traffic Estimation: A Matrix Completion Approach
Rong Du (Shanghai Jiao Tong University, P.R. China), Cailian Chen (Shanghai Jiao Tong University, P.R. China), Bo Yang (Shanghai Jiao Tong University, P.R. China), Xinping Guan (Shanghai Jiao Tong University, P.R. China) .......................................................... 30

On the Recruitment of Smart Vehicles for Urban Sensing
Sherin Abdel Hamid (Queen's University, Canada), Glen Takahara (Queen's University, Canada), Hossam S. Hassanein (Queen's University, Canada) .......................................................... 36

Interaction between EDCA and HCCA: Simulation Study of DSRC for Work Zone Safety
Jae-Han Lim (University of California, Los Angeles, USA), Mario Gerla (University of California at Los Angeles, USA), Danijela Cabric (University of California Los Angeles, USA) .......................................................... 42

Join Driving: A Smart Phone-based Driving Behavior Evaluation System
Hongyang Zhao (Zhejiang University, P.R. China), Huan Zhou (Zhejiang University, P.R. China), Canfeng Chen (Nokia Research Center, P.R. China), Jiming Chen (Zhejiang University, P.R. China) .......................................................... 48

Towards Efficient Vacant Taxis Cruising Guidance
Yunfei Hou (State University of New York at Buffalo, USA), Xu Li (InterDigital Communications, USA), Yunjie Zhao (State University of New York at Buffalo, USA), Xiaowei Jia (State University of New York at Buffalo, USA), Adel Sadek (State University of New York at Buffalo, USA), Kevin Hulme (SUNY Buffalo, P.R. China), Chunming Qiao (State University of New York at Buffalo, USA) .......................................................... 54
Delay Tolerant Networks

**CCS-DTN: Efficient Routing in Social DTNs Based on Clustering and Network Coding**
ZhenJing Zhang (Nanyang Technological University, Singapore), Maode Ma (Nanyang Technological University, Singapore), Zhigang Jin (Tianjin University, P.R. China) .......................................................... 60

**An Adaptive Routing Protocol based on Connectivity Prediction for Underwater Disruption Tolerant Networks**
Tiansi Hu (Northeastern University, USA), Yunsi Fei (Northeastern University, USA) .................... 65

**A Novel Routing Method for Improving Message Delivery Delay in Hybrid DTN-MANET Networks**
Masaya Ito (Tohoku University, Japan), Hiroki Nishiyama (Tohoku University, Japan), Nei Kato (Tohoku University, Japan) ................................................................................................................................. 72

**Delay Analysis of Disruption Tolerant Networks with Two-Hop Routing in a Finite-Buffer Regime**
Nima Torabkhani (Georgia Institute of Technology, USA), Faramarz Fekri (Georgia Institute of Technology, USA) ................................................................................................................................. 78

**Primal Decomposition and Online Algorithms for Flow Optimization in Wireless DTNs**
George Konidaris (Athens University of Economics and Business, Greece), Stavros Toumpis (Athens University of Economics and Business, Greece), Savvas Gitzenis (Certh, Greece) .................... 84

Fault Tolerance

**ALLONE: A New Adaptive Failure Detector Model for Low-power Lossy Networks**
Fatima Zohra Benhamida (Ecole Nationale Supérieure d'Informatique, Algeria), Yacine Challal (University of Technology of Compiegne, France), Mouloud Koudil (Ecole Nationale Supérieure d'Informatique, Algeria) ................................................................. 91

**Exploiting Soil Moisture Information for Adaptive Error Control in Wireless Underground Sensor Networks**
Xin Dong (Wildsense, LLC, USA), Mehmet Can Vuran (University of Nebraska-Lincoln, USA) ........ 97

**Multiple Attributes-based Data Recovery in Wireless Sensor Networks**
Guangshuo Chen (Shanghai Jiao Tong University, P.R. China), Xiao-Yang Liu (Columbia University, P.R. China), Linghe Kong (Shanghai Jiao Tong University, P.R. China), Jia-Liang Lu (Shanghai Jiao Tong University, P.R. China), Yu Gu (Singapore University of Technology and Design, Singapore), Wei Shu (The University of New Mexico, USA), Min-You Wu (Shanghai Jiao Tong University, P.R. China) ................................. 103

**TAMR: Traffic-Aware Multipath Routing for Fault Tolerance in 6LoWPAN**
Kiwoong Kwon (Korea Advanced Institute of Science and Technology, Korea), Minkeun Ha (Korea Advanced Institute of Science and Technology, Korea), Seong Hoon Kim (Korea Advanced Institute of Science and Technology, Korea), Daeyoung Kim (KAIST, Korea) ............................................................ 109

**Multi-hop Networks with Cooperative Relaying Assisted Links**
Torsten Andre (University of Klagenfurt, Austria) .............................................................................. 115

Localization Schemes

**Does Multi-hop Communication Enhance Localization Accuracy?**
Walid M. Ibrahim (Queen's University, Canada), Hossam S. Hassanein (Queen's University, Canada), Abd-EIhamid M. Taha (Alfaisal University, Saudi Arabia) ......................................................... 121

**LALS: A Low Power Accelerometer Assisted Location Sensing Technique for Smartphones**
Thomas O. Oshin (Queen Mary University of London, United Kingdom), Stefan Poslad (Queen Mary University of London, United Kingdom) .................................................................................................. 127

**A Two-tier Positioning Algorithm for Wireless Networks with Diverse Measurement Types**
Zimu Yuan (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China), Shuhui Yang (Purdue University Calumet, USA), Wei Li (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China) .............................................................. 134
GOSSIPY: A Distributed Localization System for Internet of Things using RFID Technology
Lobna Eslim (Queen's University, Canada), Walid M. Ibrahim (Queen's University, Canada), Hossam S. Hassanein (Queen's University, Canada) 140

Adaptive Collaboration for Heterogeneous Sensor Networks in Dynamic Environments
Kejiang Xiao (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China), Rui Wang (Institute of Computing Technology of the Chinese Academy of Sciences, P.R. China), Li Cui (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China) 146

Medium Access Control I

Automated MAC Protocol Generation under Dynamic Traffic Conditions
Jian Zhen (University of California, Santa Barbara, USA), Volkan Rodoplu (University of California, Santa Barbara, USA) 152

Stochastic Analysis of Handshake-type Mechanisms in Uniformly Random Wireless Ad Hoc Networks
Thomas Bourgeois (Waseda University, Japan), Shigeru Shimamoto (Waseda University, Japan) 158

Joint Optimization of Spectrum Sensing and Dynamic Spectrum Access System
Ye Wang (University of Ontario Institute of Technology, Canada), Bin Cao (Harbin Institute of Technology, P.R. China), Xiaodong Lin (University of Ontario Institute of Technology, Canada), Qinyu Zhang (Shenzhen Graduate School, Harbin Institute of Technology, P.R. China) 164

A Distributed CSMA Algorithm for Wireless Networks based on Ising Model
Yi Wang (University of Florida, USA), Ye Xia (University of Florida, USA) 170

Distributed Dynamic Scheduling in Wireless Ad Hoc Networks with Spatial Randomness
Chun-Hung Liu (National Chiao Tung University, Taiwan), Yi-Chen Tsai (National Cheng Kung University, Taiwan) 177

Localization and Link Layer Issues

An Efficient Indoor Navigation Scheme Using RFID-based Delay Tolerant Network
Hao Ji (Nanjing University, P.R. China), Lei Xie (Nanjing University, P.R. China), Yafeng Yin (Nanjing University, P.R. China), Sanglu Lu (Nanjing University, P.R. China) 183

A Non-parametric Modeling of Time-of-flight Ranging Error for Indoor Network Localization
Yuan Yang (Freie Universität Berlin, Germany), Yubin Zhao (Freie Universität Berlin, Germany), Marcel Kyas (Freie University Berlin, Germany) 189

Localization Accuracy of Range-only Sensors with Additive and Multiplicative Noise
Xiufang Shi (Zhejiang University, P.R. China), Zaiyue Yang (Zhejiang University, P.R. China), Jiming Chen (Zhejiang University, P.R. China) 195

Efficient Range-Free Localization Algorithm for Randomly Distributed Wireless Sensor Networks
Ahmad El Assaf (INRS, Canada), Slim Zaidi (University of Quebec, INRS-EMT, Canada), Sofiene Affes (INRS-EMT, Canada), Nahi Kandil (Université du Québec en Abitibi-Temiscamingue, Canada) 201

Consensus-based Time Synchronization in Sensor Networks: an Experimental Study
Hao Li (Zhejiang University, P.R. China), Jainping He (Zhejiang University, P.R. China), Peng Cheng (Zhejiang University, P.R. China), Jiming Chen (Zhejiang University, P.R. China) 207

Medium Access Control II

Distributed Interferer-Channel Aware Scheduling in Large-Scale Wireless Ad Hoc Networks
Chun-Hung Liu (National Chiao Tung University, Taiwan) 213
Performance Analysis of Grouping Strategy for Dense IEEE 802.11 Networks
Lei Zheng (UVic, Canada), Lin Cai (University of Victoria, Canada), Jianping Pan (University of Victoria, Canada), Minming Ni (University of Victoria, Canada) ........................................ 219

A Pipelined-Forwarding, Routing-Integrated and Effectively-Identifying MAC for Large-Scale WSN
Fei Tong (University of Victoria, Canada), Minming Ni (University of Victoria, Canada), Lei Shu (Guangdong University of Petrochemical Technology, P.R. China), Jianping Pan (University of Victoria, Canada) ........................................................................................................ 225

Harmonizing MAC and Routing in Low Power and Lossy Networks
Piergiuseppe Di Marco (Royal Institute of Technology, Sweden), Carlo Fischione (KTH, Sweden), George Athanasiou (KTH Royal Institute of Technology, Sweden), Prodromos-Vasileios Mekikis (Universitat Politecnica de Catalunya (UPC), Spain) ........................................................................................................ 231

AFR: Accurate and Fast RFID Estimation
Wenchao Jiang (Shanghai Jiao Tong University, P.R. China), Yanmin Zhu (Shanghai Jiao Tong University, P.R. China), Bo Li (Hong Kong University of Science and Technology, Hong Kong) .... 237

Node Placement and Topology Control

Relay Node Placement in Partitioned Wireless Sensor Networks with Guaranteed Lifetime
Shilin Xu (Shanghai Jiaotong University, P.R. China), Lingge Jiang (Shanghai Jiaotong University, P.R. China), Chen He (Shanghai Jiaotong University, P.R. China), Qi Xi (Shanghai Jiaotong University, P.R. China) ........................................................................................................ 243

Energy and Coverage Trade-offs in Deploying a Mix of Mobile and Stationary Relays for Disjoint Wireless Sensor Networks
Izzet F Senturk (The Ohio State University, USA), Kemal Akkaya (Southern Illinois University Carbondale, USA) ........................................................................................................ 249

Distributed Approach for Reconnecting Disjoint Segments
Yatish K Joshi (University of Maryland Baltimore County, USA), Mohamed Younis (University of Maryland Baltimore County, USA) ........................................................................................................ 255

A Multi-Objective Genetic Algorithm for Constructing Load-Balanced Virtual Backbones in Probabilistic Wireless Sensor Networks
Jing (Selena) He (Kennesaw State University, USA), Shouling Ji (Georgia Institute of Technology, USA), Raheem Beyah (Georgia Institute of Technology, USA), Yingshu Li (Georgia State University, USA) ........................................................................................................ 261

A New WSN Deployment Algorithm for Water Pollution Monitoring in Amazon Rainforest Rivers
Zakia Khalfallah (UPMC, France), Ihem Fajjari (Virtuor, France), Nadjib Aitsaadi (LiSSi - University of Paris-Est Creteil (UPEC), France), Rami Langar (UPMC - University of Paris 6, France), Guy Pujolle (University Pierre et Marie Curie - Paris 6, France) ........................................................................................................ 267

Coverage and Topology Control

On the Maximum Coverage Area of Wireless Networked Control Systems under Stability and Cost-Efficiency Constraints
Deniz Kilinc (Koc University, Turkey), Mustafa Ozger (Koc University, Turkey), Ozgur B. Akan (Koc University, Turkey) ........................................................................................................ 274

Energy-Efficient Area Coverage in Bistatic Radar Sensor Networks
Qianqian Yang (Zhejiang University, P.R. China), Shibo He (Arizona State University, USA), Jiming Chen (Zhejiang University, P.R. China) ........................................................................................................ 280

A Distributed Area Coverage Algorithm For Maintenance Of Randomly Distributed Sensors With Adjustable Sensing Range
Yipeng Qu (Florida International University, USA), Stavros Georgakopoulos (Florida International University, USA) ........................................................................................................ 286
Distributed Online Visual Sensor Network Reconfiguration for Resource-aware Coverage and Task Assignment
Bernhard Dieber (Alpen-Adria Universität Klagenfurt, Austria), Bernhard Rinner (Klagenfurt University, Austria) ................................................................. 292

3D Clustering-Based Camera Wireless Sensor Networks for Maximizing Lifespan With Minimum Coverage Rate Constraint
Lijun Xie (Texas A&M University, USA), Xi Zhang (Texas A&M University, ECE Department, USA) .......................................................................................... 298

Topology Management

Ferry-Based Linear Wireless Sensor Networks
Imad Jawhar (UAE University, UAE), Mostafa Ammar (Georgia Institute of Technology, USA), Sheng Zhang (Nanjing University, P.R. China), Jie Wu (Temple University, USA), Nader Mohamed (UAEU, UAE) ........................................................................ 304

New SAPFR Protocol for WSNs with Sensitive Clusters
Shichao Wang (Northwestern Polytechnical University, P.R. China), Ruonan Zhang (Northwestern Polytechnical University, P.R. China), Lin Cai (University of Victoria, Canada), Yi Jiang (Northwestern Polytechnical University, P.R. China) ........................................................................ 310

Mobility-assisted Distributed Sensor Clustering for Energy-efficient Wireless Sensor Networks
Kai Li (University of Central Florida, USA), Kien Hua (University of Central Florida, USA) .......................................................... 316

On the Throughput of Wireless Underground Sensor Networks using Magneto-Inductive Waveguides
Steven Kisseleff (Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany), Wolfgang Gerstacker (University of Erlangen-Nuernberg, Germany), Zhi Sun (State University of New York at Buffalo, USA), Ian F. Akyildiz (Georgia Institute of Technology, USA) ........................................................................ 322

Online Flow-based Energy Efficient Management in Wireless Mesh Networks
Ahmed Amokrane (Université Pierre et Marie Curie, France), Rami Langar (UPMC - University of Paris 6, France), Raouf Boutaba (University of Waterloo, Canada), Guy Pujolle (University Pierre et Marie Curie - Paris 6, France) ........................................................................ 329

Link Layer Protocols

A Stochastic Geometry Approach for Outage Analysis of Ad Hoc SISO Networks in Rayleigh Fading
Asma Afzal (National University of Sciences and Technology, Pakistan), Syed Ali Hassan (National University of Sciences and Technology, Pakistan) ........................................................................ 336

An Efficient Scheme for MTC Overload Control based on Signaling Message Compression
Tarik Taleb (NEC Europe Ltd., Germany), Adlen Ksentini (University of Rennes 1 / IRISA Lab, France) ........................................................................ 342

A Capacity Upper Bound for Large Wireless Networks with Generally Distributed Nodes
Guoqiang Mao (The University of Technology, Sydney, Australia), Zhihua Lin (University of Sydney, Australia), Wei Zhang (The University of New South Wales, Australia) ........................................................................ 347

Bistatic Backscatter Radio for Power-limited Sensor Networks
John Kimionis (Georgia Institute of Technology, USA), Aggelos Bletsas (Technical University of Crete, Greece), John Sahalos (University of Nicosia, Cyprus) ........................................................................ 353

Utilization of Channel Properties for Channel Access in Ad Hoc Networks with Heterogeneous Channels
Crystal A. Jackson (Clemson University, USA), Harlan B. Russell (Clemson University, USA) ........................................................................ 359
Impact of Location Heterogeneity on Random Walk Mobility Models
Jinbei Zhang (Shanghai Jiaotong University, P.R. China), Luoyi Fu (Shanghai Jiao Tong University, P.R. China), Xinbing Wang (Shanghai Jiaotong University, P.R. China), Mohsen Guizani (QU, USA) 365

Throughput Evaluation for Cooperative Drive-Thru Internet using Microscopic Mobility Model
Haibo Zhou (Shanghai Jiao Tong University, P.R. China), Bo Liu (Shanghai Jiao Tong University, P.R. China), Tom H. Luan (School of Information Technology, Australia), Fen Hou (University of Macau, Macao), Gui Lin (Shanghai JiaoTong University, P.R. China), Ying Li (China Electronic System Engineering Company, P.R. China), Sherman Shen (University of Waterloo, Canada) 371

Theme Park Mobility in Disaster Scenarios
Gürkan Solmaz (University of Central Florida, USA), Damla Turgut (University of Central Florida, USA) 377

Analysis of Communication Link Lifetime Using Stochastic Microscopic Vehicular Mobility Model
Khadige Abboud (University of Waterloo, Canada), Weihua Zhuang (University of Waterloo, Canada) 383

A Sociality-aware Approach to Computing Backbone in Mobile Opportunistic Networks
Tong Liu (Shanghai Jiao Tong University, P.R. China), Yanmin Zhu (Shanghai Jiao Tong University, P.R. China), Ruobing Jiang (Shanghai Jiao Tong University, P.R. China), Bo Li (Hong Kong University of Science and Technology, Hong Kong) 389

Security and QoS

Adaptive Key Management for Wireless Sensor Networks
Tony Vincent Cheneau (NIST, USA), Mudumbai Ranganathan (National Institute of Standards and Technology, USA) 395

Secure and Privacy Preserving Hierarchical Wireless Sensor Networks using Hybrid Key Management Technique
Sushmita Ruj (Indian Statistical Institute, Kolkata, India), Kouichi Sakurai (Kyushu University, Japan) 402

End-to-End Delay Reduction via In-Network Computation in Cognitive Radio Sensor Networks
Shih Chun Lin (Georgia Institute of Technology, USA) 408

Providing End-to-End Delay Guarantees for Multi-hop Wireless Sensor Networks
I-Hong Hou (Texas A&M University, USA) 414

Progressive compression and transmission of images Experimental evaluation over Visual Sensor Networks
Abdelhamid Mammeri (University of Ottawa, Canada), Azzedine Boukerche (University of Ottawa, Canada), Renfei Wang (University of Ottawa, Canada), Depu Zhou (University of Ottawa, Canada) 420

Data Centric Protocols

Distributed Scheduling for Real-Time Data Collection in Wireless Sensor Networks
Xiaohua Xu (University of Toledo, USA), Xiang-Yang Li (Illinois Institute of Technology, USA), Min Song (The University of Toledo, USA) 426

APED: An Efficient Aggregation Protocol with Error Detection for Smart Grid Communications
Ruixue Sun (Zhejiang University, P.R. China), Zhiguo Shi (Zhejiang University, P.R. China), Rongxing Lu (Nanyang Technological University, Singapore), Min Lu (Zhejiang University, P.R. China), Sherman Shen (University of Waterloo, Canada) 432
Scheduling Data Transmissions of Underwater Sensor Nodes for Maximizing Value of Information
Ladislau Bölöni (University of Central Florida, USA), Damla Turgut (University of Central Florida, USA), Stefano Basagni (Northeastern University, USA), Chiara Petrioli (University of Rome "La Sapienza", Italy) 438

Behavior-Aware Probabilistic Routing For Wireless Body Area Sensor Networks
Song Yang (Shanghai Jiao Tong University, P.R. China), Jia-Liang Lu (Shanghai Jiao Tong University, P.R. China), Fan Yang (Shanghai Jiao Tong University, P.R. China), Linghe Kong (Shanghai Jiao Tong University, P.R. China), Wei Shu (The University of New Mexico, USA), Min-You Wu (Shanghai Jiao Tong University, P.R. China) 444

PackTrix: From Data Packing to Reconstruction for A Sensor Network Based Structural Health Monitoring System
Zhiyi Zhou (Shanghai Jiao Tong University, P.R. China), Rong Du (Shanghai Jiao Tong University, P.R. China), Cailian Chen (Shanghai Jiao Tong University, P.R. China), Bo Yang (Shanghai Jiao Tong University, P.R. China), Xinping Guan (Shanghai Jiao Tong University, P.R. China) 450

Energy Harvesting and Optimization

Hexagonal Clustering with Mobile Energy Replenishment in Wireless Sensor Networks
Jun Tao (Southeast University, P.R. China), Lei Zhang (University of Victoria, Canada), Maryam Ahmadi (University of Victoria, Canada), Le Chang (University of Victoria, Canada), Jianping Pan (University of Victoria, Canada), Wenqiang Chen (Southeast University, Nanjing, Jiangsu, P.R. China) 456

Multi-hop wireless charging optimization in Low-Power Networks
Tifenn Rault (Université de Technologie - Compiegne, France), Abdelmadjid Bouabdallah (Université de Technologie - Compiegne, France), Yacine Challal (University of Technology of Compiegne, France) 462

Heuristic Relay Assignments for Green Relay Assisted Device to Device Communications
Tao Han (New Jersey Institute of Tech, USA), Nirwan Ansari (NIIT, USA) 468

Wei Chen (Beijing Jiao Tong University, P.R. China), Yiannis Andreopoulos (University College London, United Kingdom), Ian James Wassell (University of Cambridge, United Kingdom), Miguel Rodrigues (University College London, United Kingdom) 474

Optimum Power and Rate Allocation in Video Sensor Networks
Amr El-Sherif (Alexandria University, Egypt), Amr Mohamed (Qatar University, Qatar), Victor CM Leung (The University of British Columbia, Canada) 480

Topics in Ad Hoc and Sensor Networks (Interactive Session)

Energy Efficient Optimal Node-Source Localization using Mobile Beacon in Ad-Hoc Sensor Networks
Sudhir Kumar (Indian Institute of Technology Kanpur, India), Vatsal Sharan (Indian Institute of Technology Kanpur, India), Rajesh M Hegde (Indian Institute of Technology Kanpur, India) 487

WLAN Scanning Strategies for RSSI-based Positioning
Deric Waters (Texas Instruments, USA), Mohamed Mansour (TI, USA), Ariton Xhafa (Texas Instruments Inc., USA) 493

Pure Asynchronous Neighbor Discovery Algorithms in Ad Hoc Networks Using Directional Antennas
Feng Tian (Shanghai Jiao Tong University, P.R. China), Rose Qingyang Hu (Utah State University, USA), Yi Qian (University of Nebraska–Lincoln, USA), Bo Rong (Communications Research Center Canada, Canada), Bo Liu (Shanghai Jiao Tong University, P.R. China), Gui Lin (Shanghai Jiao Tong University, P.R. China) 498
Selectively Iterative Particle Filtering and Its Applications for Target Tracking in WSN
Wei Jing (University of Waterloo, Canada), Hai Zhao (Northeastern University, P.R. China), Xiaodong Lin (University of Ontario Institute of Technology, Canada), Sherman Shen (University of Waterloo, Canada) 504

Fingerprinting-based localization using accelerometer information in wireless sensor networks
Xiaowei Lv (Université de Technologie de Troyes, France), Farah Mourad-Chehade (Université de Technologie de Troyes, France), Hichem Snoussi (University of Technology of Troyes, France) 510

A Performance Evaluation of a Context-Aware Path Recommendation Protocol for Vehicular Ad-hoc Networks
Maram Bani Younes (University of Ottawa, Canada), Azzedine Boukerche (University of Ottawa, Canada) 516

On Exploiting Signal Irregularity with Topology Control for Mobile Underwater Wireless Sensor Networks
Linfeng Liu (Nanjing University of Posts and Telecommunications, P.R. China), Ye Liu (University of Science and Technology of China, P.R. China) 522

Discovering Traffic Congestion along Routes of Interest using VANETs
Giuseppe Martuscelli (University of Bologna, Italy), Azzedine Boukerche (University of Ottawa, Canada), Paolo Bellavista (University of Bologna, Italy) 528

Debin Zou (Communication University of China, P.R. China), Yongbin Wang (Communication University of China, P.R. China) 534

Energy Efficient Protocols

Sensor Network based Optimal Energy Flow Control in Buildings
Shinjae Kang (Korea Electronics Technology Institute, Korea), Hyunggon Park (Ewha Womans University, Korea) 539

Optimizing Communication Energy Consumption in Perpetual Wireless Nanosensor Networks
Shahram Mohrehkesh (Old Dominion University, USA), Michele C. Weigle (Old Dominion University, USA) 545

Energy Optimization with Delay Constraints in Underwater Acoustic Networks
Poongovan Ponnavaikko (Santa Clara University, USA), Kamal Yassin (Santa Clara University, USA), Sarah Kate Wilson (Santa Clara University, USA), Milica Stojanovic (Northeastern University, USA), JoAnne Holliday (Santa Clara University, USA) 551

Energy Consumption Measurements and Reduction of Zigbee based Wireless Sensor Networks
Ahmad El Kouche (Queen's University, Canada), Abdulmonem Mohammad Rashwan (Queen's University, Canada), Hossam S. Hassanein (Queen's University, Canada) 557

Energy Efficient Reactive Store-and-Forward Protocol for Intermittently Connected Networks
Ying Li (University of New Hampshire, USA), Radim Bartos (University of New Hampshire, USA) 563

Vehicular Networks

AAF: Analog Superposition Assisted Forwarding Node Selection and Density Estimation in Vehicular Networks
Pratap Kumar Sahu (University of Montreal, Canada), Abdelhakim Hafid (University of Montreal, Canada) 569

Message Scheduling and Delivery with Vehicular Communication Network Infrastructure
Jiazhen Zhou (University of Wisconsin - Whitewater, USA), Rose Qingyang Hu (Utah State University, USA), Yi Qian (University of Nebraska–Lincoln, USA) 575
An Empirical Performance Study of Intra-vehicular Wireless Sensor Networks under WiFi and Bluetooth Interference
Jiun-Ren Lin (Carnegie Mellon University, USA), Tim Talty (General Motors, USA), Ozan Tonguz (Carnegie Mellon University, USA) 581

Reliable Safety Message Dissemination with Minimum Energy in VANETs
Fen Zhou (University of Avignon, France), Abderrahim Benslimane (University of Avignon, France) 587

Community-Aware Data Replication in Sparse Vehicular Networks
Zhenni Feng (Shanghai Jiao Tong University, P.R. China), Yanmin Zhu (Shanghai Jiao Tong University, P.R. China), Ruobing Jiang (Shanghai Jiao Tong University, P.R. China), Bo Li (Hong Kong University of Science and Technology, Hong Kong) 593

GC13 CISS: Globecom 2013 - Communication and Information System Security Symposium

Security of Wireless Networks

A Topology Hidden Anonymous Multicast Routing for Ad Hoc Networks
Wei Yuan (University of Essex, United Kingdom), Liang Hu (Jilin University, P.R. China), Kun Yang (University of Essex, United Kingdom) 599

Monitoring Home Network Traffic via Programmable Routers
Kuai Xu (Arizona State University, USA), Lin Gu (Hong Kong University of Science and Technology, Hong Kong), Feng Wang (Arizona State University, USA) 605

Evasive Eavesdroppers in Adversarial Cognitive Radio Networks
Ali K Houjeij (University of Illinois at Urbana-Champaign, USA), Walid Saad (University of Miami, USA), Tamer Başar (University of Illinois at Urbana-Champaign, USA) 611

Mitigating Misleading Routing Attack using Path Signature in Mobile Ad-Hoc Networks
Farah Kandah (University of Tennessee at Chattanooga, USA), Yashaswi Singh (NDSU, USA), Wei Yi Zhang (AT&T Labs Research, USA), Yulu Ma (China Telecom, Shanghai Research Center, P.R. China) 617

A Density Based Scheme to Countermeasure Spectrum Sensing Data Falsification Attacks in Cognitive Radio Networks
Changlong Chen (University of Toledo, USA), Min Song (The University of Toledo, USA), ChunSheng Xin (Old Dominion University, USA) 623

Application and Social Network Security

Privacy-preserving Attribute-based Friend Search in Geosocial Networks with Untrusted Servers
Linke Guo (University of Florida, USA), Xiaoyan Zhu (Xidian University, P.R. China), Chi Zhang (University of Science of Technology of China, P.R. China), Yuguang Fang (University of Florida, USA) 629

Adaptive Threshold Displacement Algorithm for Removing Hidden Information from Digital Images
Fahimeh Rezaei (University of Nebraska Lincoln, USA), Michael Hempel (University of Nebraska-Lincoln, USA), Tao Ma (Xidian University, P.R. China), Pradhumna L Shrestha (University of Nebraska-Lincoln, USA), Dongming Peng (University Nebraska - Lincoln, USA), Hamid Sharif (University of Nebraska-Lincoln, USA) 635

Sybil Defenses in Mobile Social Networks
Wei Chang (Temple University, USA), Jie Wu (Temple University, USA), Chiu C. Tan (Temple University, USA), Feng Li (Indiana University-Purdue University Indianapolis, USA) 641
**SPS: Secure Personal Health Information Sharing with Patient-centric Access Control in Cloud Computing**
Mrinmoy Barua (University of Waterloo, Canada), Rongxing Lu (Nanyang Technological University, Singapore), Sherman Shen (University of Waterloo, Canada) 647

**Secure and Effective Image Storage for Cloud Based E-healthcare Systems**
Chunhe Song (University of Waterloo, Canada), Xiaodong Lin (University of Ontario Institute of Technology, Canada), Sherman Shen (University of Waterloo, Canada) 653

**Topics in Communication and Information System Security (Interactive Session)**

**Probability of Strictly Positive Secrecy Capacity of the Weibull Fading Channel**
Xian Liu (University of Arkansas at Little Rock, USA) 659

**Transmit Antenna Selection with Alamouti Scheme in MIMO Wiretap Channels**
Shihao Yan (The University of New South Wales, Australia), Nan Yang (The University of New South Wales, Australia), Robert Malaney (University of New South Wales, Australia), Jinhong Yuan (University of New South Wales, Australia) 665

**Security and Privacy in Cloud Computing and Storage**

**Practical and Privacy-assured Data Indexes for Outsourced Cloud Data**
Hongli Zhang (Harbin Institute of Technology, P.R. China), Zhigang Zhou (Harbin Institute of Technology, P.R. China), Xiaojiang Du (Temple University, USA), Panpan Li (Harbin Institute of Technology, P.R. China), Xiangzhan Yu (Harbin Institute of Technology, P.R. China) 671

**Protecting Private Cloud Located within Public Cloud**
Hongli Zhang (Harbin Institute of Technology, P.R. China), Lin Ye (Harbin Institute of Technology, P.R. China), Xiaojiang Du (Temple University, USA), Mohsen Guizani (QU, USA) 677

**Effectively Auditing IaaS Cloud Servers**
Chunlu Wang (Beijing Post and Telecommunication University, P.R. China), Liu Chuanyi (Beijing University of Posts and Telecommunications, P.R. China), Xiaoliang Wang (Beijing University of Posts and Telecommunications, P.R. China), Yingfei Dong (University of Hawaii, USA) 682

**P2E: Privacy-preserving and Effective Cloud Data Sharing Service**
Xin Dong (Shanghai Jiao Tong University, P.R. China), Jiadi Yu (Shanghai Jiao Tong University, P.R. China), Yuan Luo (Shanghai Jiao Tong University, P.R. China), Yingying Chen (Stevens Institute of Technology, USA), Xue Guantao (Shanghai Jiao Tong University, P.R. China), Minglu Li (Shanghai Jiao Tong University, P.R. China) 689

**Provable Ownership of File in De-duplication Cloud Storage**
Chao Yang (Xidian University, USA), Jian Ren (Michigan State University, USA), Jian-feng Ma (Xidian University, Puerto Rico) 695

**PHY-layer Security**

**Covert OFDM Transmission Using CDD Based Frequency Selective Channel**
Sun Songlin (Beijing University of Posts and Telecommunications, P.R. China), Bo Rong (CRC, Canada), Yanhong Ju (Beijing University of Posts and Telecommunications, P.R. China) 701

**Connectivity of Multi-channel Wireless Networks Under Jamming Attacks**
Chengzhi Li (Broadcom, USA), Huaiyu Dai (NC State University, USA) 706

**Secure OFDM Transmission Based on Multiple Relay Selection and Cooperation**
Weikun Hou (The University of Western Ontario, Canada), Xianbin Wang (The University of Western Ontario, Canada), Ahmed Refaey (University of Western Ontario, Canada) 712
A Secure and Robust Self-Encoded Spread Spectrum Multiple-Access Approach for Multimedia Communication System
Kun Hua (Lawrence Technological University, USA), Guang-Chong Zhu (Lawrence Tech. University, USA), Athanasios V. Vasilakos (National Technical University of Athens, Greece), Honggang Wang (University of Massachusetts, Dartmouth, USA), Wei Wang (South Dakota State University, USA) 717

Realizing an 802.11-based Covert Timing Channel Using Off-The-Shelf Wireless Cards
Sakthi Vignesh Radhakrishnan (Georgia Institute of Technology, USA), A. Selcuk Uluagac (Georgia Institute of Technology, USA), Raheem Beyah (Georgia Institute of Technology, USA) 722

Internet Security

A Dynamical Deterministic Packet Marking Scheme for DDoS Traceback
Shui Yu (Deakin University, Australia), Wanlei Zhou (Deakin University, Australia), Song Guo (The University of Aizu, Japan), Minyi Guo (Shanghai Jiao Tong University, P.R. China) 729

A Novel Anomaly Detection System based on Seven-dimensional Flow Analysis
Marcos V. O. de Assis (State University of Londrina, Brazil), Joel J. P. C. Rodrigues (Instituto de Telecomunicações, University of Beira Interior, Portugal), Mario Lemes Proença Jr. (State University of Londrina, Brazil) 735

A Novel Anomaly Detection System based on Seven-dimensional Flow Analysis

Thwarting Traceback Attack on Freenet
Guanyu Tian (Florida State University, USA), Zhenhai Duan (Florida State University, USA), Todd Baumeister (University of Hawaii at Manoa, USA), Yingfei Dong (University of Hawaii, USA) 741

What are you Googling? - Inferring search type information through a statistical classifier
Alfonso Iacovazzi (Sapienza University of Rome, Italy), Andrea Baiocchi (University of Roma Sapienza, Italy), Ludovico Bettini (Sapienza - University of Rome, Italy) 747

Using Randomized Routing to Counter Routing Table Insertion Attack on Freenet
Todd Baumeister (University of Hawaii at Manoa, USA), Yingfei Dong (University of Hawaii, USA), Guanyu Tian (Florida State University, USA), Zhenhai Duan (Florida State University, USA) 754

Smart Grid Security I

On False Data Injection Attack against Multistep Electricity Price in Electricity Market in Smart Grid
Jie Lin (Xi'an Jiaotong University, P.R. China), Wei Yu (Towson University, USA), Xinyu Yang (Xi'an Jiaotong University, P.R. China) 760

Mitigating False-data Injection Attacks on DC State Estimation using Covert Topological Information
Suzhi Bi (National University of Singapore, Hong Kong), Ying Jun (Angela) Zhang (The Chinese University of Hong Kong, Hong Kong) 766

False-data Injection Attack to Control Real-time Price in Electricity Market
Suzhi Bi (National University of Singapore, Hong Kong), Ying Jun (Angela) Zhang (The Chinese University of Hong Kong, Hong Kong) 772

Efficient Public-Key Certificate Revocation Schemes for Smart Grid
Mohamed M E A Mahmoud (Tennessee Tech University, USA), Jelena Mišić (Ryerson University, Canada), Sherman Shen (University of Waterloo, Canada) 778

A Scalable Public Key Infrastructure for Smart Grid Communications
Mohamed M E A Mahmoud (Tennessee Tech University, USA), Jelena Mišić (Ryerson University, Canada), Sherman Shen (University of Waterloo, Canada) 784
Smart Grid Security II

4-Way Handshaking Protection for Wireless Mesh Network Security in Smart Grid
Hamid Gharavi (NIST, USA), Bin Hu (National Institute of Standards and Technology, USA) .................................. 790

ECQ: An Efficient Conjunctive Query Scheme over Encrypted Multidimensional Data in Smart Grid
Mi Wen (Shanghai University of Electric Power, P.R. China), Rongxing Lu (Nanyang Technological University, Singapore), Jingsheng Lei (Shanghai University of Electric Power, Canada), Xiaohui Liang (University of Waterloo, Canada), Hongwei Li (University of Electronic Science and Technology of China, P.R. China), Sherman Shen (University of Waterloo, Canada) ........................................................................................................ 796

Robust Group Key Management with Revocation and Collusion Resistance for SCADA in Smart Grid
Rong Jiang (National University of Defense Technology, P.R. China), Rongxing Lu (Nanyang Technological University, Singapore), Chengzhe Lai (Xidian University, P.R. China), Jun Luo (National University of Defense Technology, P.R. China), Sherman Shen (University of Waterloo, Canada) ........................................................................................................ 802

Detecting Stealthy False Data Injection Using Machine Learning in Smart Grid
Mohammad Esmalifalak (University of Houston, USA), Nam Tuan Nguyen (University of Houston, USA), Rong Zheng (McMaster University, Canada), Zhu Han (University of Houston, USA) ........................................................................................................ 808

Mobile Platform Security

On Behavior-based Detection of Malware on Android Platform
Wei Yu (Towson University, USA), Hanlin Zhang (Towson University, USA), Linqiang Ge (Computer and Information Sciences, Towson University, USA), Rommie Hardy (Army Research Lab, USA) ........................................................................................................ 814

MobiCache: When k-anonymity Meets Cache
Xiaoyan Zhu (Xidian University, P.R. China), Haotian Chi (Xidian University, P.R. China), Ben Niu (Xidian University, P.R. China), Weidong Zhang (Xidian University, P.R. China), Zan Li (Xidian University, P.R. China), Hui Li (Xidian University, P.R. China) ........................................................................................................ 820

Detecting GPS Information Leakage in Android Applications
Siyuan Ma (Shanghai Jiaotong University, P.R. China), Zhushou Tang (Shanghai Jiao Tong University, P.R. China), Qiuuy Xiao (Shanghai Jiao Tong University, P.R. China), Jiafa Liu (Shanghai Jiao Tong University, P.R. China), Triet Duong Tran (Shanghai Jiao Tong University, Vietnam), Xiaodong Lin (University of Ontario Institute of Technology, Canada), Haojin Zhu (Shanghai Jiao Tong University, P.R. China) ........................................................................................................ 826

LGTH: A Lightweight Group Authentication Protocol for Machine-Type Communication in LTE Networks
Chengzhe Lai (Xidian University, P.R. China), Hui Li (Xidian University, P.R. China), Rongxing Lu (Nanyang Technological University, Singapore), Rong Jiang (National University of Defense Technology, P.R. China), Sherman Shen (University of Waterloo, Canada) ........................................................................................................ 832

Preserving Location Privacy on the Release of Large-scale Mobility Data
Xueheng Hu (University of Notre Dame, USA), Aaron D Striegel (University of Notre Dame, USA) ........................................................................................................ 838

Information Security and Anonymity

Combating Network Pollution Attacks: A Cascaded Error-Control Coding Approach
Jian Li (Michigan State University, USA), Tongtong Li (Michigan State University, USA), Jian Ren (Michigan State University, USA) ........................................................................................................ 844
Neighborhood Watch: On Network Coding Throughput and Key Sharing
Martin Strohmeier (University of Oxford, United Kingdom), Ivan Martinovic (University of Oxford, United Kingdom), Utz Roedig (Lancaster University, United Kingdom), Karim El Defrawy (HRL Laboratories, USA), Jens Schmitt (University of Kaiserslautern, Germany) .................................. 849

Anonymity-Preserving Identity-Based Multisignature Scheme with Provision for Origin Self-Revelation
Weihan Goh (Nanyang Technological University, Singapore), Chai Kiat Yeo (Nanyang Technological University, Singapore) ........................................................................................................... 855

An Efficient and Anonymous Attribute-Based Group Setup Scheme
Bing Li (Arizona State University, USA), Zhijie Wang (Arizona State University, USA), Dijiang Huang (Arizona State University, USA) ........................................................................................................... 861

RE-NOTE: An E-voting Scheme based on Ring Signature and Clash Attack Protection
Haijun Pan (New Jersey Institute of Technology, USA), Edwin Hou (New Jersey Institute of Technology, USA), Nirwan Ansari (NJIT, USA) ........................................................................................................... 867