2014 IEEE 39th Conference on Local Computer Networks

(LCN 2014)

Edmonton, Alberta, Canada
8-11 September 2014

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Technical Program of LCN 2014 and Adjunct Workshops

Time	Salon A	Salon B	Lacombe	Klondike
Sunday, September 7				
16:00	Welcome Reception and Early Registration in the Promenade			
Monday, September 8				
08:00	Registration			
09:00		SenseApp: Applications I	P2MNet: Keynote: On Reliability of Wireless Sensor Networks	
10:30	Coffee break			
11:00		SenseApp: Keynote: Wireless Beyond Wi-Fi	P2MNet: Session2: Wireless Sensor networks	
12:00		SenseApp: Applications II		
12:30	Lunch break			
13:30			P2MNet: Session 3: QoS Analysis of Mobile Networks	WNM: Keynote: Listening to Noise (and making sense of it)
13:45		SenseApp: Deployment and Programming		
14:10				WNM: Session 1
15:00	Coffee break			
15:30		SenseApp: Radio and MAC	P2MNet: Session 4: Performance Analysis of Wireless Networks	WNM: Keynote: Network Performance Measurement for Real-Time Multiplayer Mobile Games
16:10				WNM: Session 2
16:25		Conclusion		
18:00	Workshops Monday - End of the technical program			
Tuesday, September 9				
08:00	Registration			
09:00	Opening and Welcome			
09:30	Keynote 1: Communication Ecosystem in Motion			
10:30	Coffee break			
11:00	1: Plenary session: Best Paper Candidates			
12:30	Lunch break			
13:30		2a: Wireless Multi-hop Networks	2b: Network Management	
15:30	Demonstrations with Coffee, Posters with Tea			
17:00	LCN Tuesday - End of the technical program			
18:00	Conference Banquet			
Wednesday, September 10				
08:30	Registration			

09:00		3a: Opportunistic Networks	3b: Network Traffic Characterization and Measurements	
10:30	Coffee break			
11:00	Keynote 2: Beyond Cyber-Physical Era: What's Next?			
12:00	Invitation to LCN 2015			
12:30	Lunch break			
13:30		4a: Localization	4b: Multimedia & Performance Evaluation	
15:00	Coffee break			
15:30		5a: Wireless Sensor Networks	5b: Security	
18:00	LCN Wednesday - End of the technical program			

Thursday, September 11

08:30	Registration			
09:00		goSmart: Keynote	ON-MOVE: Techniques and Approaches	WLN: Architectural challenges in future wireless networks
09:45		goSmart: Smart Energy		
10:30	Coffee break			
11:00		goSmart: Smart Services	ON-MOVE: Keynote	WLN: Novel paradigms in Wireless Local Networks
12:00			ON-MOVE: Applications	
12:30	Lunch break			
13:30	Workshops Thursday - End of the technical program			

Sunday, September 7

16:00 - 19:00

Welcome Reception and Early Registration in the Promenade

Monday, September 8

08:00 - 09:00

Registration

09:00 - 10:30

P2MNet: Keynote: On Reliability of Wireless Sensor Networks

Prof. Ehab Elmallah
Room: Lacombe

Abstract:
Wireless sensor networks (WSNs) have attracted significant attention in recent years for their potential to replace many of the existing wired sensing solutions, as well as provide new solution platforms where wired solutions are hard to deploy and maintain. The use of low cost communication and sensing devices, and the operation of such networks in harsh environments, however, make the nodes prone to random failure. Various reliability aspects of WSNs have been investigated in the literature since the cost and means of handling such failure events in the field can be a significant detrimental factor against adopting WSNs as dependable solutions.
In this talk, we discuss approaches for analysing the impact of node failure events on the operation of the overall network. To explore

11:00 - 12:30

1: Plenary session: Best Paper Candidates

Room: Salon A
Chair: Nils Aschenbruck (University of Osnabrück, Germany)

Practical OFDMA for Corridor-based Routing in Wireless Multihop Networks
Adrian Loch (Technische Universität Darmstadt, Germany), Matthias Hollick (Technische Universität Darmstadt & Secure Mobile Networking Lab, Center for Advanced Security Research Darmstadt, Germany), Alexander Kuehne (TU Darmstadt, Germany) and Anja Klein (TU Darmstadt, Germany)
pp. 1-9

Content Peering in Content Centric Networks
Jason Min Wang (The Hong Kong University of Science and Technology, Hong Kong), Xiangming Dai (The Hong Kong University of Science and Technology, Hong Kong) and Brahim Bensaou (The Hong Kong University of Science and Technology, Hong Kong)
pp. 10-18

vINCENT: An Incentive Scheme Supporting Heterogeneity in Peer-to-Peer Content Distribution
Matthias Wichtlhuber (Technische Universität Darmstadt, Germany), Peter Heise (Airbus Group Innovations, Germany), Björn Scheurich (TU Darmstadt, Germany), Julius Rückert (Technische Universität Darmstadt, Germany) and David Hausheer (TU Darmstadt, Germany)
pp. 19-27

12:30 - 13:30

Lunch break

13:30 - 15:30

2a: Wireless Multi-hop Networks

Room: Salon B
Chair: Matthias Hollick (Technische Universität Darmstadt & Secure Mobile Networking Lab, Center for Advanced Security Research Darmstadt, Germany)

Caching-Assisted Access for Vehicular Resources
Sherin Abdelhamid (Queen's University, Canada), Hossam S. Hassanein (Queen's University, Canada), Glen Takahara (Queen's University, Canada) and Hesham Farahat (Queen's University, Canada)
pp. 28-36

Dynamic Curve Adaptation for Geographic Routing in Wireless Multihop Networks
Adrian Loch (Technische Universität Darmstadt, Germany), Wei-Chih Hong (Academia Sinica, Taiwan) and Matthias Hollick (Technische Universität Darmstadt & Secure Mobile Networking Lab, Center for Advanced Security Research Darmstadt, Germany)
pp. 37-45

On the Potential of MPT/MPR Wireless Networks
Ke Li (University of Alberta, Canada), Ioanis Nikolaidis (University of Alberta, Canada) and Janelle Harms (University of Alberta, Canada)
pp. 46-54

A Multi-rate Multi-channel Multicast Algorithm in Wireless Mesh Networks
Wanqing Tu (Robert Gordon University, United Kingdom)
pp. 55-63

Caching Piggyback Information for Efficient Index Code Transmission
Jalaluddin Qureshi (Namal College, Pakistan)
pp. 64-71

2b: Network Management

Room: Lacombe
Chair: Jens Toelle (Fraunhofer FKIE & University of Bonn, Germany)

Resource Allocation and Request Handling for User-Aware Content Retrieval in the Cloud
Boyang Yu (University of Victoria, Canada) and Jianping Pan (University of Victoria, Canada)
pp. 72-80

Resource Reservation Comparison of Fault Resilient Routing Schemes
Yigal Bejerano (Bell-Labs, Alcatel-Lucent, USA) and Pramod Koppol (Bell Labs, Alcatel-Lucent, USA)
pp. 81-89

Efficient Virtual Network Embedding Via Exploring Periodic Resource Demands
Zichuan Xu (Australian National University, Australia), Weifa Liang (The Australian National University, Australia) and Qiufen Xia (Australian National University, Australia)
pp. 90-98

Performance of Probabilistic Caching and Cache Replacement Policies for Content-Centric Networks
Saran Tarnoi (National Institute of Informatics & The Graduate University for Advanced Studies, Japan), Kalika Suksomboon (KDDI R&D Laboratories Inc., Japan), Wuttipong Kumwilaisak (King Mongkut's University of Technology, Thonburi, Thailand) and Yusheng Ji (National Institute of Informatics, Japan)
pp. 99-106

CQRD: A Switch-based Approach to Flow Interference in Data Center Networks
Guo Chen (Tsinghua University, P.R. China), Dan Pei (Tsinghua University, P.R. China) and Youjian Zhao (Tsinghua University, P.R. China)
pp. 107-115

15:30 - 17:00

Demonstrations with Coffee

Room: Salon A
Chair: Karl Andersson (Luleå University of Technology, Sweden)

A Web-based Time Machine with Augmented Reality
Mikael Holmgren (Luleå University of Technology, Sweden), Dan Johansson (Luleå University of Technology, Sweden) and Karl Andersson (Luleå University of Technology, Sweden)

Advances in Wireless M2M and IoT: Rapid SDR-prototyping of IEEE 802.11ah
Stefan Aust (NEC Communication Systems, Ltd., Japan), R Venkatesha Prasad (TU Delft, India) and Ignas G.M.M. Niemegeers (Delft University of Technology, The Netherlands)

Demonstration of Bandwidth Demand and Jitter Properties of a Software Sender/Scheduler for the (proposed) ILDA Digital Network
Matthias Frank (University of Bonn, Germany)

Demo Proposal for IEEE LCN 2014 Cryptographically-Curated File System (CCFS): Secure, Inter-operable, and Easily Implementable Information-Centric Networking
Aaron Goldman (Georgia Institute of Technology, USA), A. Selcuk Uluagac (Florida International University & Electrical and Computer Engineering, USA) and John A. Copeland (Georgia Institute of Techonology, USA)

The Smartphone Based Road Condition Monitoring (SRoM) System
Sam Aleyadeh (Queen's University, Canada), Sharief M.A. Oteafy (Queen's University, Canada), Sherin Abdelhamid (Queen's University, Canada) and Hossam S. Hassanein (Queen's University, Canada)

Posters with Tea

Room: Salon A
Chair: Salil S Kanhere (The University of New South Wales, Australia)

Towards On-Path Caching Alternatives in Information-Centric Networks
Andriana Ioannou (Trinity College of Dublin, Ireland) and Stefan Weber (Trinity College Dublin, Ireland)
pp. 362-365

Performances of Cryptographic Accumulators
Amrit Kumar (INRIA Rhone-Alpes, France), Pascal Lafourcade (LIMOS, Clermont University, France) and Cedric Lauradoux (INRIA & Insa Lyon, France)
pp. 366-369

Delay Tolerant Handover for Heterogeneous Networks
Peggy Begerow (Technische Universitaet Ilmenau, Germany), Silvia Krug (Technische Universitaet Ilmenau, Germany), Atheer Al-Rubaye (Ilmenau University of Technology, Germany), Karsten Renhak (Technische Universitaet Ilmenau, Germany) and Jochen Seitz (Technische Universitaet Ilmenau, Germany)
pp. 370-373

Reducing MANET Neighborhood Discovery Overhead
Raphael Ernst (University of Bonn, Germany), Sascha A. Jopen (University of Bonn, Germany) and Tobias Bartelt (University of Bonn, Germany)
pp. 374-377

Back to the Future: A Need for Multi-Drop Ethernet for Cost-Effective Power Distribution
Ken Christensen (University of South Florida, USA) and Bruce Nordman (Lawrence Berkeley National Laboratory, USA)
pp. 378-381

Secure Key Renewal and Revocation for Wireless Sensor Networks
Ismail Mansour (Clermont University, France), Gerard Chalhoub (Clermont University, France), Pascal Lafourcade (LIMOS, Clermont University, France) and François Delobel (Clermont University & LIMOS, CNRS (UMR VI-I-V-VIII), France)
pp. 382-385

Time Calibration in Experiments with Networked Sensors
Olivier Mehani (NICTA, Australia), Ronnie Taib (NICTA, Australia) and Benjamin Itzstein (National ICT Australia, Australia)
pp. 386-389

Spatial Unfairness in IEEE 802.11 Networks
Yigal Bejerano (Bell-Labs, Alcatel-Lucent, USA), Hyoung-gyu Choi (Yonsei University, Korea) and Seung-Jae Han (Yonsei University, Korea)
pp. 390-393

Data Aggregation in VANETs - A Generalized Framework for Channel Load Adaptive Schemes
Josef Jiru (Fraunhofer ESK, Germany), Lars Bremer (Fraunhofer ESK, Germany) and Kalman Graffi (Heinrich Heine University Düsseldorf, Germany)
pp. 394-397

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Leveraging Network Virtualization for Energy-Efficient Cloud: Future Directions
Fatoumata B. Kasse (Université Cheikh Anta Diop de Dakar, Senegal), Bamba Gueye (Université Cheikh Anta Diop de Dakar, Senegal) and Halima Elbiaze (University of Quebec at Montreal, Canada)
pp. 494-497

On the Possibility of Mitigating Content Pollution in Content-Centric Networking
Igor Ribeiro (Universidade Federal Fluminense, Brazil), Antonio A Rocha (Fluminense Federal University, Brazil), Celio Albuquerque (Fluminense Federal University, Brazil) and Flávio Guimarães (Marinha do Brasil, Brazil)
pp. 498-501

Anchor Selection and Geo-Logical Routing in 3D Wireless Sensor Networks
Yi Jiang (Colorado State University, USA) and Anura P Jayasumana (Colorado State University, USA)
pp. 502-505

A Fine-Grain Partial MAC Virtualization to Support Cross Layer Design in Wireless Ad Hoc Networks
Seon Yeong Han (KAIST, Korea), Byoungheon Shin (Korea Advanced Institute of Science and Technology, Korea) and Dongman Lee (KAIST, Korea)
pp. 506-509

A Stable Minimum Velocity CDS-based Virtual Backbone for VANET in City Environment
Mohammed Amine Togou (University of Montreal & Network Research Laboratory, Canada), Abdelhakim Hafid (University of Montreal, Canada) and Pratap Kumar Sahu (University of Montreal, Canada)
pp. 510-513

17:00 - 17:15

LCN Tuesday - End of the technical program

18:00 - 22:00

Conference Banquet

Wednesday, September 10

08:30 - 09:00

Registration

09:00 - 10:30

3a: Opportunistic Networks

Room: Salon B
Chair: Hossam S. Hassanein (Queen's University, Canada)

Analyzing Information Propagation in a Transoceanic Aircraft Delay Tolerant Network
Rubén Martínez-Vidal (Universitat Autònoma de Barcelona, Spain), Ramon Martí (Universitat Autònoma de Barcelona, Spain) and Joan Borrell (Universitat Autonoma de Barcelona, Spain)
pp. 116-123

Real-World Evaluation of Sensor Context-aware Adaptive Duty-cycled Opportunistic Routing
Zhongliang Zhao (University of Bern, Switzerland) and Torsten Ingo Braun (University of Bern, Switzerland)
pp. 124-132

MEME: Real-Time Mobility Estimation for Mobile Environments
Shiraz Qayyum (Rochester Institute of Technology, USA), Umair Sadiq (University of Texas at Arlington, USA) and Mohan J Kumar (Rochester Institute of Technology, USA)
pp. 133-141

Cryptographically-Curated File System (CCFS): Secure, Inter-operable, and Easily Implementable Information-Centric Networking
Aaron Goldman (Georgia Institute of Technology, USA), A. Selcuk Uluagac (Florida International University & Electrical and Computer Engineering, USA) and John A. Copeland (Georgia Institute of Techonology, USA)
pp. 142-149

3b: Network Traffic Characterization and Measurements

Room: Lacombe
Chair: Olivier Mehani (NICTA, Australia)

Practical Passive Shared Bottleneck Detection Using Shape Summary Statistics
David Hayes (University of Oslo, Norway), Simone Ferlin (University of Oslo & Simula Research Laboratory, Norway) and Michael Welzl (University of Oslo, Norway)
pp. 150-158

Evaluating CoDel, PIE, and HRED AQM Techniques with Load Transients
Ilpo Järvinen (University of Helsinki, Finland) and Markku Kojo (University of Helsinki, Finland)
pp. 159-167

CluClas: Hybrid Clustering-Classification Approach for Accurate and Efficient Network Classification
Adil Fahad (RMIT University, Australia), Kurayman Alharthi (Deakin University, Australia), Zahir Tari (RMIT University, Australia), Abdulmohsen Almalawi (RMIT University, Australia) and Ibrahim Khalil (Faculty member, RMIT University, Australia)
pp. 168-176

A TCP Model for Short-Lived Flows to Validate Initial Spreading
Renaud Sallantin (University of Toulouse & CNES, France), Cédric Baudoin (Thales Alenia Space, France), Emmanuel Chaput (Irit-Enseeiht, France), Fabrice Arnal (Thales Alenia Space, France), Emmanuel Dubois (CNES, France) and André-Luc Beylot (IRIT Toulouse, France)
pp. 177-184

10:30 - 11:00

Coffee break

11:00 - 12:00

Keynote 2: Beyond Cyber-Physical Era: What's Next?

Prof. Sajal K. Das, Department of Computer Science, Missouri University of Science and Technology
Room: Salon A
Chair: Salil S Kanhere (The University of New South Wales, Australia)

Abstract: We live in an era where our physical and personal environments are becoming increasingly smarter as they are immersed with sensing, networking, computing and communication capabilities. The availability of rich mobile devices like smartphones have empowered humans as an integral part of many cyber-physical systems. This synergy has indeed led to what is called "cyber-physical-social convergence" exhibiting complex interactions, interdependencies and adaptations among objects, devices, machines, systems/environments, users, human behavior, and social dynamics. In such a connected world, almost everything can potentially

act as information source, analyzer and decision maker. This keynote talk will present some of the emerging research challenges and opportunities in the world of cyber-physical-social convergence. It will also reflect upon the fundamental question: "What's Next?"

12:00 - 12:30

Invitation to LCN 2015

Room: Salon A

12:30 - 13:30

Lunch break

13:30 - 15:00

4a: Localization

Room: Salon B
Chair: Tim Strayer (BBN Technologies, USA)

A Cooperative Localization Scheme Using RFID Crowdsourcing and Time-Shifted Multilateration
Lobna Eslim (Queen's University, Canada), Hossam S. Hassanein (Queen's University, Canada), Walid M. Ibrahim (Queen's University, Canada) and Abdallah Alma'aitah (Queen's University, Canada)
pp. 185-192

An Energy Efficient Framework for Localization and Coverage in Participatory Urban Sensing
Adnan Khan (The University of Texas at Arlington, USA), Sk Kajal Arefin Imon (University of Texas at Arlington, USA) and Sajal K. Das (Missouri University of Science and Technology, USA)
pp. 193-201

CSI-MIMO: Indoor Wi-Fi Fingerprinting System
Yogita Chapre (University of New South Wales, Australia), Aleksandar Ignjatovic (University of New South Wales, Australia), Aruna Seneviratne (University of New South Wales, Australia) and Sanjay Jha (University of NSW, Australia)
pp. 202-209

WaP: Indoor Localization and Tracking Using WiFi-Assisted Particle Filter
Feng Hong (Ocean University of China, P.R. China), Yongtuo Zhang (Ocean University of China, P.R. China), Zhao Zhang (Ocean University of China, P.R. China), Meiyu Wei (Ocean University of China, P.R. China), Feng Yuan (Ocean University of China, P.R. China) and Zhongwen Guo (Ocean University of China, P.R. China)
pp. 210-217

4b: Multimedia & Performance Evaluation

Room: Lacombe
Chair: Ioanis Nikolaidis (University of Alberta, Canada)

How Dia-Shows Turn Into Video Flows: Adapting Scalable Video Communication to Heterogeneous Network Conditions in Real-Time
Fabian Jäger (HAW Hamburg, Germany), Thomas C. Schmidt (Hamburg University of Applied Sciences, Germany) and Matthias Wählisch (Freie Universität Berlin, Germany)
pp. 218-226

A Deterministic QoE Formalization of User Satisfaction Demands (DQX)
Christos Tsiaras (University of Zurich & Communication Systems Group, Switzerland) and Burkhard Stiller (University of Zürich & ETH Zürich, TIK, Switzerland)
pp. 227-235

PowerPi: Measuring and Modeling the Power Consumption of the Raspberry Pi
Fabian Kaup (TU Darmstadt, Germany), Philip Gottschling (TU Darmstadt, Germany) and David Hausheer (TU Darmstadt, Germany)
pp. 236-243

H-box: Interconnecting Devices Across Local Networks
Dung Vu Ba Tien (Aalto University, Finland), Miika K.T. Komu (Aalto University, Finland), Matti Siekkinen (Aalto University, Finland) and Antti Ylä-Jääski (Aalto University, Finland)
pp. 244-252

15:00 - 15:30

Coffee break

15:30 - 18:00

5a: Wireless Sensor Networks

Room: Salon B
Chair: Matthias Frank (University of Bonn, Germany)

Breach Path to Target Area Detection Reliability in Wireless Sensor Networks
Mohammed Elmorsy (Alberta University, Canada) and Ehab S. Elmallah (University of Alberta, Canada)
pp. 253-261

An Energy- And Proximity-based Unequal Clustering Algorithm for Wireless Sensor Networks
Mohammad Mehdi Afsar (University of QIAU, Iran) and Mohamed Younis (University of Maryland Baltimore County, USA)
pp. 262-269

Maintaining Sensor Networks Perpetually Via Wireless Recharging Mobile Vehicles
Weifa Liang (The Australian National University, Australia), Wenzheng Xu (Sun Yat-Sen University, The Australian National University, P.R. China), Xiaojiang Ren (The Australian National University, Australia), Xiaohua Jia (City University of Hong Kong, Hong Kong) and XiaoLa Lin (Sun Yat-Sen University, P.R. China)
pp. 270-278

Bi-Scale Temporal Sampling Strategy for Traffic-Induced Pollution Data with Wireless Sensor Networks
Lamling Venus Shum (University College London, United Kingdom), Stephen Hailes (University College London, United Kingdom), Manik Gupta (Queen Mary, University of London, United Kingdom), Eliane Bodanese (Queen Mary, University of London, United Kingdom), Pachamuthu Rajalakshmi (Indian Institute of Technology Hyderabad, India) and Uday B Desai (IIT Hyderabad, India)
pp. 279-287

Data Collection From Wireless Sensor Networks Using a Hybrid Mobile Agent-based Approach
Tuhin Paul (University of Saskatchewan, Canada) and Kevin G Stanley (University of Saskatchewan, Canada)
pp. 288-295

Measuring the Impact of Denial-of-Service Attacks on Wireless Sensor Networks
Michael Riecker (Technische Universität Darmstadt, Germany), Daniel Thies (Banking, Germany) and Matthias Hollick (Technische Universität Darmstadt & Secure Mobile Networking Lab, Center for Advanced Security Research Darmstadt, Germany)
pp. 296-304

5b: Security

Room: Lacombe
Chair: Katrin Reitsma (Motorola Solutions, USA)

MPFC: Massively Parallel Firewall Circuits
Sven Hager (Humboldt University of Berlin, Germany), Frank Winkler (Humboldt University of Berlin, Germany), Björn Scheuermann (Humboldt University of Berlin, Germany) and Klaus Reinhardt (Universität Tübingen, Germany)
pp. 305-313

On Rule Width and the Unreasonable Effectiveness of Policy Verification
Hrishikesh B Acharya (University of Texas at Austin, USA)
pp. 314-321

OutMet A New Metric for Prioritising Intrusion Alerts Using Correlation and Outlier Analysis
Riyanat Shittu, Miss (City University London & British Telecom (BT), United Kingdom), Muttukrishnan Rajarajan (City University London, United Kingdom), Robin Bloomfield (City University, United Kingdom), Alex Healing (British Telecom, United Kingdom) and Robert Ghanea-Hercock (British Telecom, United Kingdom)
pp. 322-330

A Gen2v2 Compliant RFID Authentication and Ownership Management Protocol
Haifeng Niu (Missouri University of Science and Technology, USA), Sarangapani Jagannathan (Missouri University of Science and Technology, USA) and Eyad Taqieddin (Jordan University of Science and Technology, USA)
pp. 331-336

Unleashing the Shrew: a Stealth Greedy Targeted Attack on TCP Traffic in Wireless LANs
Liyi Gu (The Hong Kong University of Science and Technology, Hong Kong), Jun Zhang (Telecom ParisTech, France) and Brahim Bensaou (The Hong Kong University of Science and Technology, Hong Kong)
pp. 337-344

Making Active-Probing-Based Network Intrusion Detection in Wireless Multihop Networks Practical: A Bayesian Inference Approach to Probe Selection
Rodrigo do Carmo (Technische Universität Darmstadt, Germany), Justus Hoffmann (Technische Universität Darmstadt, Germany), Volker Willert (TU Darmstadt, Germany) and Matthias Hollick (Technische Universität Darmstadt & Secure Mobile Networking Lab, Center for Advanced Security Research Darmstadt, Germany)
pp. 345-353

LSD-ABAC: Lightweight Static and Dynamic Attributes Based Access Control Scheme for Secure Data Access in Mobile Environment
Fei Li (City University London, United Kingdom), Yogachandran Rahulamathavan (City University London, United Kingdom) and Muttukrishnan Rajarajan (City University London, United Kingdom)
pp. 354-361