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Sunday, October 25

16:00 - 19:00

Welcome Reception and Early Registration in "Island 2"

Monday, October 26

08:30 - 09:00

Registration

09:00 - 10:00

CloudNA: Keynote: Data Foundries: The Cauldron of the IoT, Clouds and Datacenters

Dr. Masood Mortazavi, Huawei Innovation Center, USA

Room: Palm Room

Chair: Khaled Salah (Khalifa University of Science, Technology and Research (KUSTAR), UAE)

Abstract: The datacenters that form the core engines for transporting, persisting and transforming data are not merely the major building blocks of the "Cloud". They are more akin to "alchemical" data foundries that transform raw bits of data to the gold of information, content and the derived knowledge services that we have come to expect and desire so voraciously. These services help extend our minds and our cognitive powers so we can construct and live in "smarter" learning and living environments. Societies that learn and live smarter will advance faster to give higher meaning to human life and endeavours. How did these data foundries come into being? What forces gave rise to them? What special problems do they solve? Why are they necessary? What are the limits and challenges they face? How will science, technology and other human institutions color the advance of the datacenters, and will be colored by them? Studying possible answers to these questions and exploring possible future scenarios will help us see what lies around the corner from where we are today.The challenges of networking, data storage, computing and power efficiency and effective user interface remain core to the design of data foundries. Other challenges which are much harder to comprehend and resolve have to do with the interaction of these new technologies with social and economic realities. Advances are required in a multitude of dimensions to produce next-generation datacenter systems and architectures.Bio: Dr. Masood Mortazavi is a distinguished engineer and the senior director of IT Research Department at Huawei Technologies, US R&D Center. Earlier, Masood was senior principle architect at Yahoo's Cloud Infrastructure Group. He led multiple advanced projects related to automatic elasticity systems, cloud services architecture, automatic and adaptive controllers for salability of infrastructure services, multi-petabyte distributed databases, structured and unstructured storage, scalable messaging and application container services. He has published and spoken internationally on NoSQL databases, multi-tenancy, big data and privacy. Masood led an international group of engineers at Sun Microsystems, focused on the development of open-source software, including databases such as Apache Derby, PostgreSQL and MySQL. At Huawei's Innovation Center in Santa Clara, Masood leads a team of researchers focused on next-generation data centers, distributed systems, databases, file systems and digital archives.

09:00 - 09:15

SenseApp: Welcome

Room: Gulf Room

Chair: Csaba Kiraly (Bruno Kessler Foundation, Italy)

09:00 - 10:30

WNM: Session 1

Room: Bay Room

Measuring Broadband Access Network Performance in Pakistan: A Comparative Study
M Faheem Awan and Tahir Ahmad (National University of Science and Technology, Pakistan); Saad B. Qaisar (School of Electrical Engineering and Computer Science (SEECS), NUST & National University of Sciences & Technology, Pakistan); Nick Feamster (Georgia Institute of Technology, USA); Srikanth Sundaresan (International Computer Science Institute(ICSI), USA)
pp. 595-602

Remotely Inferring Device Manipulation of Industrial Control Systems Via Network Behavior
Georgios Lontorfos (Johns Hopkins University Information Security Institute, USA); Kevin D. Fairbanks (United States Naval Academy, USA); Lanier Watkins (Johns Hopkins University Information Security Institute, USA); William H. Robinson (Vanderbilt University, USA)
pp. 603-610

Feature Selection for Robust Backscatter DDoS Detection
Eray Balkanli, Nur Zincir-Heywood and M. I. Heywood (Dalhousie University, Canada)
pp. 611-618

09:15 - 10:30

SenseApp: Session 1

Room: Gulf Room

A Testbed for Fine-Grained Tracing of Time Sensitive Behavior in Wireless Sensor Networks
Roman Lim (ETH Zurich, Switzerland); Balz Maag (ETH Zürich, Switzerland); Benjamin Dissler (ETH Zurich, Switzerland); Jan Beutel (ETH Zurich & Computer Engineering and Networks Lab, Switzerland); Lothar Thiele (Swiss Federal Institute of Technology Zurich (ETH Zurich), Switzerland)
pp. 619-626

Accelerated Clock Drift Estimation for High-Precision Wireless Time-Synchronization
Andreas Engel and Andreas Koch (Darmstadt University of Technology, Germany)
pp. 627-635

A Heterogeneous System Architecture for Low-Power Wireless Sensor Nodes in Compute-intensive Distributed Applications
Andreas Engel (TU Darmstadt & Computer Science Institute, Germany); Thomas Siebel (Fraunhofer LBF, Germany); Andreas Koch (Darmstadt University of Technology, Germany)
pp. 636-644

10:00 - 10:30

CloudNA: Session 1: Inter-Cloud Data

Room: Palm Room
Chair: Khaled Salah (Khalifa University of Science, Technology and Research (KUSTAR), UAE)

Inter-Cloud Data Persistence in DIL Networks
James Pope (George Mason University & C4I Center, USA); Patrick Orsinger and Matthew Fisher (Progeny Systems, USA)
pp. 645-650

10:30 - 11:00

Coffee break

11:00 - 12:30

CloudNA: Session 2: Cloud-based Networking

Room: Palm Room

Chair: James Pope (George Mason University & C4I Center, USA)

Flexible Advance Reservation Models for Virtual Network Scheduling

Hao Bai (University of South Florida, USA); Feng Gu (University of New Mexico, USA); Khaled Bashir Shaban (Qatar University & College of Engineering, Qatar); Jorge Crichigno (Northern New Mexico College, USA); Samee U. Khan (North Dakota State University, USA); Nasir Ghani (University of South Florida, USA)

pp. 651-656

Evaluation of a Cloud Federation Approach Based on Software Defined Networking

Marc Koerner (Technische Universität Berlin, Germany); Constantin Gaul (GLISPA GmbH, Germany); Odej Kao (TU Berlin, Germany)

pp. 657-664

IGOD: Identification of Geolocation of Cloud Datacenters

Chetan Jaiswal and Vijay Kumar (University of Missouri Kansas City, USA)

pp. 665-672

11:00 - 11:50

SenseApp Keynote: Practical Issues in Building Smart Home Applications

Prof. Kamin Whitehouse, University of Virginia, USA

Room: Gulf Room

Homes are rich with information about people's health, energy consumption, and personal or family functions. This talk will discuss the practical challenges of deploying large-scale smart home applications. The talk will draw on experiences deploying over 2000 devices in over 60 homes and will highlight a phase transition where deployments become dramatically more difficult as they scale up in terms of 1) the number of nodes, 2) the length of time, and 3) the number of houses. The talk will distill these experiences down to a set of guidelines and design principles to help future deployments avoid the potential pitfalls of large-scale sensing in homes, and conclude with open questions and challenges that we still face today.

11:00 - 12:30

WNM: Session 2

Room: Bay Room

An Analysis of the YouNow Live Streaming Platform

Denny Stohr (Technische Universität Darmstadt, Germany); Tao Li (TU Dresden, Germany); Stefan Wilk (TU Darmstadt, Germany); Silvia Santini (TU Dresden, Germany); Wolfgang Effelsberg (University of Mannheim, Germany)

pp. 673-679

An Analysis of Friend Circles of Facebook Users

Esra Erdin, Eric Klukovich and Mehmet Hadi Gunes (University of Nevada, Reno, USA)

pp. 680-686

Understanding Evolution and Adoption of Top-level Domain Names
Thitipong Jarassriwilai, Tiffany Dauber, Nevil Brownlee and Aniket Mahanti (University of Auckland, New Zealand)
pp. 687-694

11:50 - 12:30

SenseApp: Session 2

Room: Gulf Room

Estimating Memory Requirements in Wireless Sensor Networks Using Social Tie Strengths
Basim Mahmood (Florida Institute of Technology & BioComplex Lab., USA); Marcello Tomasini and Ronaldo Menezes (Florida Institute of Technology, USA)
pp. 695-698

Understanding Spatial and Temporal Coverage in Participatory Sensor Networks
Julien Gedeon and Immanuel Schweizer (Technische Universität Darmstadt, Germany)
pp. 699-707

12:30 - 13:30

Lunch break

13:30 - 15:00

CloudNA: Session 3: Cloud Resource Scheduling

Room: Palm Room
Chair: Nasir Ghani (University of South Florida, USA)

Spark on Entropy: A Reliable & Efficient Scheduler for Low-latency Parallel Jobs in Heterogeneous Cloud
Huankai Chen (University of Kent, United Kingdom); Frank Wang (University of Kent in Canterbury, United Kingdom)
pp. 708-713

Leveraging Checkpoint/Restore to Optimize Utilization of Cloud Compute Resources
Rohit Mehta (University of Connecticut & Intel Corporation, USA); John A Chandy (University of Connecticut, USA)
pp. 714-721

Secure Access Control for Multi-Cloud Resources
Hendrik Graupner, Kennedy Torkura, Philipp Berger and Christoph Meinel (Hasso Plattner Institute, University of Potsdam, Germany); Maxim Schnjakin (Bundesdruckerei GmbH, Germany)
pp. 722-729

SenseApp: Session 3

Room: Gulf Room

Systemic Support for Transaction-Based Spatial-Temporal Programming of Mobile Robot Swarms
Daniel Graff, Daniel Röhrig and Reinhardt Karnapke (Technische Universität Berlin, Germany)
pp. 730-733

Rogue Z-Wave Controllers: A Persistent Attack Channel
Jonathan D. Fuller and Benjamin W. Ramsey (Air Force Institute of Technology, USA)
pp. 734-741

Automatic Protocol Configuration for Dependable Internet of Things Applications
Felix Jonathan Oppermann and Carlo Alberto Boano (Graz University of Technology, Austria); Marco Zuniga (Delft University of Technology, The Netherlands); Kay Römer (Graz University of Technology, Austria)
pp. 742-750

ProFuN TG: A Tool for Programming and Managing Performance-Aware Sensor Network Applications
Atis Elsts (SICS Swedish ICT, Sweden); Farshid Hassani Bijarbooneh, Martin Jacobsson and Konstantinos Sagonas (Uppsala University, Sweden)
pp. 751-759

13:30 - 14:30

WNM Keynote: Lessons learned on analyzing one-way network traffic

Prof. Nur Zincir-Heywood, Dalhousie University, Canada

Room: Bay Room

The rapid growth in size, and complexity of computer systems, and networks make network measurement and monitoring tasks increasingly important, and extremely challenging. The rate at which digital data is accumulated from such systems far exceeds the human ability to make sense of it, i.e., to interpret and attach meaning to it. Major challenges include data volume and diversity, data dependency, and system dynamics. The goal of this talk is to explore some of these challenges in the context of one-way traffic, while presenting research taken to mitigate the impact of these factors using (semi)automatic and intelligent systems.

14:30 - 15:00

WNM: Session 3

Room: Bay Room

Hybrid Community-Based Forwarding: A Complete Energy Efficient Algorithm for Pocket Switched Networks
Khadija Rasul, Dwight Makaroff and Kevin G Stanley (University of Saskatchewan, Canada)
pp. 760-768

15:00 - 15:30

Coffee Break

15:30 - 17:00

Cloud NA: Session 4: Green Cloud Infrastructure

Room: Palm Room
Chair: Chetan Jaiswal (University of Missouri Kansas City, USA)

Thermal-Aware, Power Efficient, and Makespan Realized Pareto Front for Cloud Scheduler
Saeeda Usman (NDSU, USA); Kashif Bilal (COMSATS Institute of Information Technology, Pakistan); Nasir Ghani (University of South Florida, USA); Samee U. Khan (North Dakota State University, USA); Laurence T. Yang (St. Francis Xavier University, Canada)
pp. 769-775

Power-aware Server Selection in Nano Data Center
Fareha Sheikh (National University of Computer & Emerging Sciences, Pakistan); Syeda Umme Habiba Fazal and Fatima Taqvi (National University of Computer and Emerging Sciences, Karachi, Pakistan); Jawwad Ahmed Shamsi (National University of COmputer and Emerging Sciences & Wayne State University, Pakistan)
pp. 776-782

An Efficient MAC Scheme in Wireless Sensor Network with Energy Harvesting (EHWSN) for Cloud Based Applications
Farrukh Shahzad and Tarek Rahil Sheltami (KFUPM, Saudi Arabia)
pp. 783-788

15:30 - 16:20

SenseApp: Session 4

Room: Gulf Room

On Design and Deployment of Fuzzy-Based Metric for Routing in Low-Power and Lossy Networks
Patrick-Olivier Kamgueu (Lorraine University & INRIA Madynes Project, France); Emmanuel Nataf (Lorraine University, France); Thomas Djotio Ndié (University of Yaounde I, Cameroon)
pp. 789-795

Estimating Node Lifetime in Interference Environments
Alex King, James Brown, John Vidler and Utz Roedig (Lancaster University, United Kingdom)
pp. 796-803

16:20 - 16:40

SenseApp: Conclusions and best paper award

Room: Gulf Room
Chair: Csaba Kiraly (Bruno Kessler Foundation, Italy)

18:30 - 19:00

LCN Wednesday - End of the technical program

Thursday, October 29

08:30 - 09:00

Registration

09:00 - 10:30

WLN: Session 1

Room: Gulf Room

Software-Defined Wireless Network Architectures for the Internet-of-Things
Amr Elmougy (German University in Cairo, Egypt); Mohamed Ibnkahla (Carleton University, Canada); Lobna Hegazy (German University in Cairo, Egypt)
pp. 804-811

A Survey: Spoofing Attacks in Physical Layer Security
Mustafa H Yilmaz and Huseyin Arslan (University of South Florida, USA)
pp. 812-817

Data Dissemination for Heterogeneous Transmission Ranges in VANets
Maryam M. Alotaibi and Hussein Mouftah (University of Ottawa, Canada)
pp. 818-825

Software Defined Networking for Wireless Local Networks in Smart Grid
Kemal Akkaya, A. Selcuk Uluagac and Abdullah Aydeger (Florida International University, USA)
pp. 826-831

09:00 - 10:00

ON-MOVE Keynote: Security and Privacy Considerations in Vehicular Communications for Smart Grid Applications

Prof. Kemal Akkaya, Florida International University, USA

Room: Palm Room
Chair: Soumaya Cherkaoui (Université de Sherbrooke, Canada)

Plug-in Electric Vehicles (PEVs) have recently received increasing popularity to promote adoption of intermittent renewable energy sources by acting as energy storage systems. In this way, PEVs can inject power to the Smart Grid during periods of reduced production to balance demand. The US Department of Energy expects that about one million PEVs will be on the roads by the end of 2016. These PEVs will typically be equipped with wireless communication capabilities (e.g., DSRC or LTE) to coordinate charging and injection among themselves and the Smart Grid. Such communication, however, exposes information such as the PEVs' locations, their parking duration, the battery status, etc. which can be misused. Long-term analysis of schedule and location information may expose user's driving patterns and whereabouts that can be used by marketers. In addition, the coordinated charging system needs to securely bill the drivers for their payments which necessitates the design of secure protocols. This talk will first focus on the privacy and security aspects of vehicle-to-grid (V2G) and vehicle-to-vehicle (V2V) communications in general. In particular, privacy, authentication and confidentiality challenges will be discussed. We will then present a framework for privacy-preserving power injection protocol for the PEVs that sell power to the grid. The talk will conclude with the future issues in V2G and V2V communications.

09:15 - 09:30

P2MNET: Welcome and Opening Remark

Room: Beach Room

09:30 - 10:30

P2MNET Keynote: Multi connectivity and energy efficiency in future 5G ultra dense deployment scenarios

Prof. Karl Andersson, Luleå University of Technology, Sweden

Room: Beach Room

In upcoming 5G networks, ultra dense deployment (UDN) is ascenario where the base stations are extremely dense in an area andenables extreme capacity per area ideally. Multi-connectivity is a way forconnecting to several base stations at the same time both for performanceand robustness reasons and enables to direct traffic to certain basestations and enable some sort of sleep mode for non used base stations.This enables energy efficiency in networks. The keynote addresses suitablesmart energy efficiency algorithms that still enables robustness.

10:00 - 10:30

ON-MOVE: Session 1

Room: Palm Room

Chair: Soumaya Cherkaoui (Université de Sherbrooke, Canada)

Caching and Forwarding Assistance for Vehicular Information Services with Mobile Requesters

Sherin Abdelhamid and Sara Elsayed (Queen's University, Canada); Tarun Kumar (Queens University, Canada); Hossam S. Hassanein (Queen's University, Canada)

pp. 832-839

10:30 - 11:00

Coffee Break

11:00 - 12:30

P2MNET: Session 2: Performance Evaluation of Wireless and Mobile Networks

Room: Beach Room

A Convex Optimization Method for Improved Coverage in Mobile Ad Hoc Networks

Zachary Ruble (University of Texas at San Antonio, USA); Margareta Stefanovic (University of Denver, USA)

pp. 840-846

A Spatial Correlation Aware Scheme for Efficient Data Aggregation in Wireless Sensor Networks

Imane Horiya Brahmi (PEL, UCD, Ireland); Soufiene Djahel (Manchester Metropolitan University, United Kingdom); Damien Magoni (University of Bordeaux, France); John Murphy (University College Dublin, Ireland)

pp. 847-854

Exploring Markov Models for the Allocation of Resources for Proactive Handover in a Mobile Environment
Vishnu Vardhan Paranthaman (Middlsex University, United Kingdom); Glenford E Mapp (MIddlesex University & Cantego Limited, United Kingdom); Purav Shah (Middlesex University & School of Science and Technology, United Kingdom); Huan X Nguyen (Middlesex University, United Kingdom); Arindam Ghosh (Middlsex University, United Kingdom)
pp. 855-861

11:00 - 11:30

WLN: Session 2

Room: Gulf Room

An Energy-Efficient Service Discovery Protocol for the IoT based on a Multi-Tier WSN Architecture
Rana Helal and Amr Elmougy (German University in Cairo, Egypt)
pp. 862-869

ON-MOVE: Invited Talk

Designing Driver Assistant Systems for Smart Vehicles
Dr. Abdelhamid Mammeri, University of Ottawa

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

With the fast advances of technology, there is a concerted determination to improve existing Driver Assistant Systems in order to increase the safety of drivers and road-users, while reducing the Transportation's environmental impacts. Advanced Driver Assistant Systems are a set of hardware and software components used to assist drivers and increase their aptitudes. Examples of such systems include object localization and avoidance systems, such as pedestrians or large animals, or lane detection and tracking systems. In this talk, the design and challenges of such systems are properly addressed. Particular attention is given to vision-based Advanced Driver Assistant Systems because they are the most reliable low-cost systems.

11:30 - 12:30

ON-MOVE: Session 2

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

Optimization of Vehicular Applications and Communication Properties with Connectivity Maps
Tobias Pögel and Lars C Wolf (Technische Universität Braunschweig, Germany)
pp. 870-877

Visualization and Cell Data Analysis Tool Based on XML Log Files
Md. Reja Alam Talukder and Karl Andersson (Luleå University of Technology, Sweden); Mominul Ahsan (Dublin City University, Ireland)
pp. 878-883

WLN Keynote: Carrots and Sticks - Incentives That Make Mobile Corwdsensing Work

Prof. Salil Kanhere, University of New South Wales, Australia

Room: Gulf Room

Crowdsourcing offers a cost-effective approach to distributed problem solving and data collection by soliciting contributions (solutions, ideas, data, etc.) from a large group of people. Recently, due to the burgeoning smartphone industry and the surging demand for sensing data, a new mobile computing and sensing paradigm called mobile crowdsensing has emerged. It collects data through crowdsourcing and has created significant momentum in both industry and academia. Key to the viability of mobile crowdsensing is providing incentives to attain a sufficient level of user participation. This talk will present a primer on designing incentive mechanisms for ensuring successful crowdsourcing campaigns. In the first part, we take a socio-economic approach to connect participants into a social network via a relationship called endorsement, which is overlaid by economic incentives. The (dual) objective is to incentivize trustworthy crowdsensing. Next we focus on heterogeneous crowdsensing, where not only the player types (abilities, costs) but also the beliefs about their respective types are different. We cast the problem as an asymmetric all-pay contest and use a series of reward functions to achieve optimal mechanism design. Finally, we propose to use Tullock contents as an alternative framework to design incentive mechanisms for crowdsensing. We explore a new dimension of optimal Tullock contents design by provisioning the prize as a function.

12:30 - 13:30

Lunch Break

Room: Gulf Room

12:30 - 14:00

N2Women Meeting

Dr. Katrin Reitsma, Dr. Damla Turgut

Room: Palm Room

13:30 - 15:00

P2MNET: Session 3: Vehicular Networks and Multimedia

Room: Beach Room

Trajectory-Based Data Forwarding with Future Neighbor Prediction in Autonomous Driving Vehicular Environments
Chi-En Chang, Yu-Yuan Lin and Kuo-Feng Ssu (National Cheng Kung University, Taiwan)
pp. 884-892

A Channel Variation-aware Algorithm for Enhanced Video Streaming Quality
Mary Riad (Queens University, Canada); Hatem Abou-zeid and Hossam S. Hassanein (Queen's University, Canada); Mazhar Tayel (Alexandria University, Egypt); Ashraf A. Taha (KSU, Saudi Arabia)
pp. 893-898

An Intelligent Vehicular Traffic Prediction (ITP) Protocol
Maram Bani Younes (University of Ottawa & Philadelphia University, Jordan); Azzedine Boukerche and Xiaoli Zhou (University of Ottawa, Canada)
pp. 899-904

15:00 - 15:30

Coffee Break

15:30 - 16:30

P2MNET: Session 4: Privacy and Safety Solutions for Wireless Networks

Room: Beach Room

Privacy-aware Communication Protocol for Hybrid IEEE 802.11s/LTE Smart Grid Architectures
Nico Saputro, Kemal Akkaya and Ismail Güvenç (Florida International University, USA)
pp. 905-911

Multi-hop and D2D Communications for Extending Coverage in Public Safety Scenarios
Leonardo Babun, Ali Ihsan Yurekli and Ismail Güvenç (Florida International University, USA)
pp. 912-919

16:30 - 17:00

P2MNET: Closing Remark

Room: Beach Room

17:00 - 17:30

Workshops Thursday - End of the technical program