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Technical Program

Workshops
Monday, July 30

9:00—10:15

ContextQoS 1: Keynote

Room: 0101
Title: "Is QoS-enabled hardware aware of QoS?"
Speaker: Prof. Dr. Bernhard Stütz (University of Applied Sciences, Stralsund, Germany)
Chair: Dr. Patrick-Benjamin Bök (Ruhr-University Bochum, Germany)
Abstract: Running up to hundreds of applications in parallel in a company network leads to a competitive situation regarding the restricted resources of the network, which is required by any of these applications with a varying degree for a certain level of quality for each service (QoS). A lot of concepts and network equipment for companies and service providers exist which allow to offer different levels of QoS in a network for each of these differing services. But network equipment often differs in performance and offered features regarding QoS provisioning. Although the technical specification of equipment of different vendors often look nearly equal, the available combinations of features regarding the availability of QoS features and, furthermore, the real performance of QoS provisioning in computer networks can differ significantly. This keynote will give an overview on these problems and will face up with the question whether QoS-enabled hardware is aware of QoS or not. Based on his broad theoretical and practical experiences from the last decades, the speaker will give input on these questions to make us aware of QoS and what it means to build, select and deploy QoS-enabled devices.
Biosketch: Bio: Bernhard Stütz received his Dr. rer. Nat. (PhD) in Tübingen, Germany. He was a professor for computer communication und computer networks at the University of Applied Sciences of Stralsund (Germany) from 1994 to 2011. In 1998 he was the co-founder of the Steinbeis Transfer Center Network Planning and Evaluation. He is an expert in the field of QoS in convergent computer networks.

NIME 1: Keynote
Room: 0131
Title: "VANET Support to Multimedia and Games: Designing and Running Road Experiments"
Speaker: Professor Alessandro Amoroso (University of Bologna, Italy)
Chair: Prof. Marco Roccetti (University of Bologna, Italy)
Abstract: Vehicular ad hoc networks (VANETs) are an emerging area of communication that offer a wide variety of possible applications, ranging from safety to multimedia and games. In a near future, in fact, we may easily envision safety and gaming applications where the real-time video captured from a vehicle is streamed to all connected ones, within some given range. We can therefore expect that the standardization of inter-vehicular communication protocols will support the emergence of such type of new applications and that multimedia and gaming, putting to good use such technologies, will rapidly grow. However, one of the obstacles to the exploitation of such applications in the context of VANETs is given by the practical impossibility to test those solutions in real life conditions, as a great number of vehicles are required to gather any significant amount of relevant experimental data. Hence, we here present an approach that makes the practicality of field tests come true, applying a novel methodology apt to experiment with multimedia applications and games in vehicular environments, as it can cope with a very limited amount of resources. The results gained by applying this approach represent a solid leapfrog in the study of such systems. We here discuss in detail the experiments that were run on the road with such methodology and the positive implications that such results reveal for the context of VANET-based multimedia and gaming.
Biosketch: Alessandro Amoroso is Associate Professor in computer science at the the University of Bologna. He is member of the Department of Computer Science since 1994, and he got his laurea degree

in physics at the same university in 1987. The main research areas of Prof. Amoroso are: mobile devices, multimedia systems, and distributed systems. In the last few years Prof. Amoroso focussed his researches on VANETs. In this scenario he proposed, with some colleagues, a novel and optimal alert system. He participated to several scientific projects of National Research Council (CNR), National Energy Board (ENEA) and University of California at San Diego (UCSD - NSF).

WiMAN 1: Keynote
Room: 0201
Title: "Cloud Enabled Vehicular Networks: Trends, Challenges, and Opportunities"
Speaker: Prof. Jinhua Guo (University of Michigan-Dearborn, USA)
Chair: Habib M. Ammari (University of Michigan-Dearborn, USA)
Abstract: Wireless technologies are rapidly evolving, and this evolution provides opportunities to utilize these technologies in support of advanced vehicle safety applications. In particular, the 4G LTE Mobile Broadband and Dedicated Short Range Communication (DSRC) offer the potential to effectively support vehicle-to-vehicle and vehicle-to-cloud communications. By offering real-time information about current traffic conditions, collision-avoidance assistance, automatic emergency incident notification, or vision enhancement systems, the communication-based vehicle safety technologies will help drivers to make better informed, more coordinated, and more intelligent decisions, increasing the overall safety and efficiency of the transportation system. In this talk, I will first describe the unique characteristics of 4G LTE and DSRC, intelligent vehicle applications enabled by 4G LTE and DSRC, and the challenges and opportunities in future vehicular networks. Then, I will present our current research work on reliable broadcasting, content centric framework for data dissemination, and security and privacy techniques for the Vehicular Networks.
Biosketch: Dr. Jinhua Guo is the director of Vehicular Networking Systems Research Laboratory and an Associate Professor in the Department of Computer and Information at the University of Michigan at Dearborn. He received his Ph.D. in Computer Science from the University of Georgia in 2002. Dr. Guo has worked on a range of important problems in experimental computer systems, spanning distributed systems, high performance computing, mobile computing, vehicular ad hoc networking, security, and privacy. His research has been funded by highly competitive external and internal sources, including NSF, OVPR, Rackham, and CEEP. He was also a recipient of the IEEE/ASEE Frontiers in Education New Faculty Fellow Award and University of Michigan Rackham Faculty Fellow Award.

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coHetNet 1: Keynote 1
Room: 0231
Title: Automation challenges in "Heterogeneous" HetNets
Speaker: Dr. Ingo Viering (Nomor Research, Germany)
Chair: Dr. Lorenzo Galati Giordano (Azcom Technology srl, Italy)
Abstract: Self-organizing-networks (SON) is a well-recognized key issue in heterogeneous networks (HetNets). Talking about millions of small cells it becomes obvious that configuration, healing and optimization of cell/radio parameters needs to be automated to a high degree and – as important – individually for every cell. Advanced radio features, such as enhanced Intercell Interference Coordination (eICIC) and Mobility Load Balancing (MLB) are often simulated in simplified HetNet scenarios with homogeneity inside the macro layer and inside the pico layer. This is necessary to understand the basics of a feature, to define it on a 3GPP level and to compare simulation results. However this also hides the challenge to automatically configure parameters which are optimal for each individual cell (or even each individual cell boundary) which typically faces individual situations in terms of user distribution and movement, cell size and shape, propagation conditions, etc. This heterogeneity even comprises the fact that the base stations may have been supplied by different vendors. With the "homogeneous" versus "heterogeneous" discussion in mind, the presentation will address HetNet challenges of all SON use case, co-existence of SON use cases as well as the multi-vendor issues.

Biosketch: Before founding Nomor Research, Ingo was working for Siemens as a consultant in all air interface related areas. Located directly on the interface between research and reality, he coordinated many collaborations between universities and Siemens. Furthermore, he acted as backoffice for the 3GPP standardization where, among others, he was the driving force for several work item launches. He was also involved in detailed early evaluation of alternative technologies such as Flash-OFDM, WiMAX, LTE and others. He is still consulting Nokia Siemens Networks in research, standardization, as well as strategic matters. Ingo got his Dr.-Ing. from University of Ulm in 2003. During this time, he collaborated with Siemens in particular on Smart Antenna technologies. He spent a research stay with the "Telecommunications Research Center Vienna (FTW)", where he conducted early measurements of the MIMO channel. He graduated 1999 at Darmstadt University of Technology. He has filed around 40 patents and published more than 30 scientific papers. Since 2007 he is Senior Lecturer at Munich University of Technology.

10:45—12:15

ContextQoS 2: Context-aware QoS in Mobile and Enterprise Networking Environments

Room: 0101
Chair: Dr. Patrick-Benjamin Bök (Ruhr-University Bochum, Germany)

Establishing Enterprise Business Context (eBC) for service policy decision in mobile broadband networks *1*
Rebecca Copeland (Core Viewpoint Limited, United Kingdom); Noel Crespi (Institut Télécom, Télécom SudParis, France)

Measuring the Impact of the Mobile Radio Channel on the Energy Efficiency of LTE User Equipments *6*
Bjoern Dusza (TU Dortmund University, Germany); Christoph Ide (TU Dortmund University, Germany); Christian Wietfeld (TU Dortmund University, Germany)

A method for the detection of QoS degradation in UMTS Networks *11*
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NIME 2: Multimedia Networking I

Room: 0131
Chair: Prof. A. El Rhalibi (Liverpool John Moores University, UK)

Mercator Atlas Robot: Bridging the Gap between Ancient Maps and Modern Travelers with Gestural Mixed Reality *22*
Gustavo Marfia (Università di Bologna, Italy); Marco Roccetti (University of Bologna, Italy); Angelo Varni (University of Bologna, USA); Marco Zanichelli (Onde Comunicazione, Italy)

On the Feasibility of Opportunistic Collaborative Mixed Reality Games in a Real Urban Scenario *27*
Dario Maggiorini (University of Milano, Italy); Christian Quadri (University of Milano, Italy); Laura Anna Ripamonti (University of Milano, Italy)

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WiMAN 2: Vehicular and Wireless Back-Haul Networks

Room: 0201
Chair: Jinhua Guo (University of Michigan-Dearborn, USA)

coHetNet 2: Energy efficiency and cooperative small cells

Room: 0231
Chair: Dr. Alvaro Valcarce (TriaGnoSys GmbH, Germany)

MobiPST 1: Wireless and Networking Security I

Room: 2101
Chair: Alfred C. Weaver (University of Virginia, USA)

PMECT 1: Performance on System and Service

Room: 2131
Chair: Werner Sandmann (Clausthal University of Technology)

Effects of Dynamic Cloud Cluster Load on Differentiated Service Availability *97*
Ameen Chilwan (Norwegian University of Science and Technology (NTNU), Norway); Astrid Undheim (Telenor Corporate Development, Norway); Poul E. Heegaard (Norwegian University of Science and Technology, Norway)

High Speed Traffic Archiving System for Flow Granularity Storage and Querying *103*
Zhen Chen (Tsinghua University, P.R. China); Shi Xi (Tsinghua University, P.R. China); Lingyun Ruan (Tsinghua University, P.R. China); Feng Xie (Tsinghua University, P.R. China); Jun Li (Tsinghua University, P.R. China)

Performance Analysis of Random Resource Allocation for Non-real-time Traffic in IEEE 802.16e under Unsaturated Traffic Condition *108*
Eunju Hwang (Korea University, Korea)

13:30—15:30

ContextQoS 3: Talk

Room: 0101
Title: "Making enterprise network's QoS mechanisms aware of business processes"
Speaker: Dr. Patrick-Benjamin Bök (Ruhr-University Bochum, Germany)
Chair: Prof. Dr. York Tüchelmann (Ruhr-University Bochum, Germany)
Abstract: The execution of business processes is supported by running many applications within a corporate network. Each business process includes several tasks which have different priorities expressing each task's relevance in helping to achieve the related business objectives. The provisioning of a certain level of QoS according to the requirements of an entire business process can hardly be accomplished using existing QoS provisioning schemes because these do not account for the dynamic requirements introduced by business processes. The definition of a certain level of QoS using the existing models is just driven by technical aspects of the running applications. Novel business aware QoS provisioning approaches should account for the dynamic requirements of business processes. This talk will give an idea of the problem and possible solutions and their benefits.
Biosketch: Patrick-Benjamin Bök received his B.Sc. (with honors) and his M.Sc. (with honors) at the Ruhr-University Bochum, Germany, both in Applied Computer Sciences, in 2006 and 2007, respectively. Since 2007 he is a research assistant at the Research Group for Integrated Information System in the Faculty of Electrical Engineering and Information Sciences at Ruhr-University Bochum, Germany. In 2012 he received his Dr.-Ing. (PhD) with honors. He performs tutorials about technical improvements for computer networks and also about enterprise planning of computer networks.

NIME 3: Multimedia Networking II

Room: 0131
Chair: Dr Claudio Palazzi (University of Padua, Italy)

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Room: 0201
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Nestor Tiglao (INESC ID, Portugal); Antonio M. Grilo (INESC/IST, Portugal)

A Software-Defined Radio tool for experimenting with RSS measurements in IEEE 802.15.4: implementation and applications *146*
Angelo Coluccia (University of Salento, Italy); Fabio Ricciato (Universitá del Salento, Italy)

Selective and Secure Over-The-Air Programming for Wireless Sensor Networks *152*
Nils Aschenbruck (University of Osnabrück, Germany); Jan Bauer (University of Bonn, Germany); Alexander Bothe (University of Bonn, Germany); Jakob Bieling (University of Bonn, Germany); Matthias Schwamborn (University of Osnabrück, Germany)

coHetNet 3: Keynote 2

Room: 0231
Title: "Heterogeneous Networks in LTE-Advanced"
Speaker: Dr. Stefan Brueck (Qualcomm, Germany)
Chair: Dr. Alvaro Valcarce (TriaGnoSys GmbH, Germany)
Abstract: 3GPP Long-term Evolution (LTE) allows operators to use new and wider spectrum and complements 3G networks with higher data rates, lower latency and a flat, IP-based architecture. To further improve the broadband user experience in an ubiquitous and cost-effective manner, 3GPP has been working on various aspects of LTE-Advanced. Since radio link performance is quickly approaching theoretical limits with 3G enhancements and LTE, the next performance leap will come from an evolved network topology. This talk discusses the need for an alternative deployment model and topology using heterogeneous networks. The concept of LTE-Advanced based heterogeneous networks is about improving spectral efficiency per unit area. Using a mix of macro, pico, femto and relay cells, heterogeneous networks enable flexible and low-cost deployments and provide a uniform broadband experience. To enhance the performance of these networks, advanced techniques are described, which are needed to manage and control interference and deliver the full benefits of such networks. These techniques include cell range expansion, adaptive inter cell interference coordination and interference cancellation receivers.
Biosketch: Stefan Brueck studied mathematics and electrical engineering at the University of Technology Darmstadt, Germany, and Trinity College Dublin, Ireland. He received his Dipl.-Math. and Dr.-Ing degrees in 1994 and 1999, respectively. From 19999 to 2008 he was working for Lucent Technologies and Alcatel-Lucent in Bell Labs and UMTS Systems Engineering, where he was responsible for the MAC layer design of the HSPA base station. In May 2008 he joined Qualcomm Research Germany and

currently leads the Radio Systems R&D activities in the R&D center in Nuremberg. He is involved in several research projects on LTE-Advanced and participates in the LTE-Advanced standardization in 3GPP.

MobiPST 2: Wireless and Networking Security II

Room: 2101
Chair: Wei Liu (Georgia Gwinnett College, USA)

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Room: 2131
Chair: Ameen Chilwan (Norwegian University of Science and Technology)

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16:00—18:00

ContexQoS 4: Context-aware QoS for Networking Applications

Room: 0101
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Room: 0201
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Reducing the Computational Cost of Ratio-based Indoor Localization *252*
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coHetNet 4: Interference and Mobility Management

Room: 0231
Chair: Dr. Lorenzo Galati Giordano (Azcom Technology srl, Italy)

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Performance Analysis of Ranking for QoS (RafoQ) Handover Algorithm for Selection of Access Network in Heterogenous Wireless Networks ***272***
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A Decoupling Approach for Distributed Mobility Management ***278***
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SN: Sensor Network Protocols and Algorithms

Room: 2131
Chair: Angelo Coluccia (University of Salento, Italy)

MultiMAC: A Multiple MAC network stack architecture for TinyOS ***284***
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The Relay Area Problem in Wireless Sensor Network ***289***
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Reliable localized event detection in a wireless distributed radio telescope ***294***
Suhail Yousaf (VU University, The Netherlands); Rena Bakhshi (VU University Amsterdam, The Netherlands); Maarten van Steen (VU University Amsterdam, The Netherlands)

Main Conference

Tuesday, July 31st

8:30—10:15

Welcome and Keynote I:

Title: Networks in Emergency Cyber-Physical-Human Systems
Speaker: Erol Gelenbe, Imperial College, London, UK
Room: Audimax
Chair: TBD
Abstract: Emergency management systems (EMS) are important and complex examples of Cyber-Physical-Human systems where wireless and wired networks play a crucial role. EMS are deployed so as to optimise the outcome of an emergency from a human perspective, and they use sensor networks, networked decision nodes and communications with evacuees and first responders to optimise the overall

Quality of Service to benefit human beings in terms of survival, health and safety, and for the the protection of nature, property and valuable infrastructures. However the use of ICT for emergency management side effects in terms of failures and malicious attacks of the ICT system, so that the outcome will be affected by how well the ICT system operates under stress. This presentation will survey relevant research on wireless sensor-assisted EMS, including networking, distributed control, and knowledge discovery, and focus on new research regarding the increased effectiveness and liabilities that wireless networks introduce in an EMS system when adversaries exacerbate the emergency by malicious wireless attacks.

10:45—12:15

Energy Efficiency

Room: 0101
Chair: TBD

CDC: An Energy-Efficient Contact Discovery Scheme For Pocket Switched Networks *300*
Shengbo Yang (Nanyang Technological University, SG), Chai Kiat Yeo (Nanyang Technological University, SG), Bu Sung Lee (Nanyang Technological University, SG)

Energy-Efficient QoS Provisioning in Demand Assigned Satellite NDMA Schemes *307*
Francisco Ganhão (Universidade Nova de Lisboa, PT), Luis Bernardo (Universidade Nova de Lisboa, PT), Rui Dinis (Instituto de Telecomunicações/UNINOVA/FCT-UNL, PT), Gonçalo Barros (FCT-UNL, UNINOVA, PT), Eduardo Santos (FCT-UNL, UNINOVA, PT), António Furtado (Universidade Nova de Lisboa / UNINOVA, PT), Rodolfo Oliveira (Universidade Nova de Lisboa/Uninova, PT), Paulo Pinto (Universidade Nova de Lisboa, PT)

Radio Planning of Energy-Efficient Cellular Networks *315*
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Room: 0131
Chair: TBD

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Jaili Lin (Institute of Computing Technology, Chinese Academy of Sciences, CN), Zhenyu Li (Institute of Computing Technology, Chinese Academy of Sciences, CN), Dong Wang (Institute of Computing Technology, Chinese Academy of Sciences, CN), Kavé Salamatian (LISTIC PolyTech, Université de Savoie Chambery Annecy, FR), Gaogang Xie (Institute of Computing Technology, Chinese Academy of Sciences, CN)

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An Analysis of the Subscription in User-Generated Content Video Systems *342*
Zhenyu Li (Institute of Computing Technology, Chinese Academy of Sciences, CN), Jaili Lin (Institute of Computing Technology, Chinese Academy of Sciences, CN)

Influential Neighbours Selection for Information Diffusion in Online Social Networks *349*
Hyoungshick Kim (University of British Columbia, UK), Eiko Yoneki (University of Cambridge, UK)

Ad hoc and Mesh Networks

Room: 0201
Chair: TBD

kTC - Robust and Adaptive Wireless Ad-hoc Topology Control *356*
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The Arbitrating Value Transfer Protocol (AVTP) - Deterministic Binary Countdown in Wireless Multi-hop Networks *365*
Dennis Christmann (University of Kaiserslautern, DE), Reinhard Gotzhein (University of Kaiserslautern, DE)

Intra-Mesh Congestion Control for IEEE 802.11s Wireless Mesh Networks *374*
Barbara Staehle (Fraunhofer IIS, DE), Michael Bahr (Siemens AG, DE), Desheng Fu (Leibniz University Hanover, DE)

Mesh Routing for Error Resilient Delivery of Multiple-Description Coded Image/Video Content *381*
Uma Parthavi Moravapalle (Indian Institute of Technology Delhi, IN), Swades De (Indian Institute of Technology, Delhi, IN)

13:30—15:00

Panel Discussion I

Topic: Architecting the Future Internet IETF Evolutionary vs. Academic Clean-Slate
Moderator: Malathi Veeraraghavan, University of VA
Panelists: TBD
Room: Audimax
Abstract: Several problems have been identified in today's Internet. These include global routing scalability, security, high operational costs, energy consumption, and difficulty in introducing new services, among others. For example, the global routing scalability problem has led to efforts in the IETF such as Locator/Identifier Split Protocol (LISP) as well as new routing and addressing architectures in the academic research community. Panelists will compare and contrast evolutionary IETF approaches with academic clean-slate solutions.

15:15—16:45

Cognitive Radio Networks

Room: 0101
Chair: TBD

OpenBTS: a step forward in the cognitive direction *388*
Pasquale Pace (University of Calabria, IT), Valeria Loscrí (University of Calabria, IT)

Efficient Location Management Scheme for Group Applications in Cellular Networks *394*
Sunae Shin (University of Missouri – Kansas City, US), Xinjie Guan (University of Missouri-Kansas City, US), Baek-Young Choi (University of Missouri – Kansas City, US)

Generalized-Bi-Connectivity for Fault Tolerant Cognitive Radio Networks *401*
Hai Liu (Hong Kong Baptist University, HK) ,Youhua Zhou (South China University of Technology, CN) ,Xiaowen Chu (Hong Kong Baptist University, HK), Yiu-Wing Leung (Hong Kong Baptist University, HK)

Controlling Spectrum Handoff With A Delay Requirement in Cognitive Radio Networks ***409***
Adisorn Lertsinsrubtavee (Université Pierre et Marie Curie – Paris 6, FR), Naceur Malouch (Université Pierre et Marie Curie – Paris 6, FR), Serge Fdida (UPMC Sorbonne Université, FR)

Security

Room: 0131
Chair: TBD

A Smartphone Security Architecture for App Verification and Process Authentication ***417***
Osman Ugus (Hamburg University of Applied Science, DE), Martin Landsmann (Hamburg University of Applied Science, DE), Dennis Gessner (NEC Laboratories Europe, DE), Dirk Westhoff (HAW Hamburg, DE)

A Secure and Efficient Multi-Device and Multi-Service Authentication Protocol (SEMMAP) for 3GPP-LTE Networks ***426***
Jie Huang (University of South Carolina, US), Chin-Tser Huang (University of South Carolina, US)

Classification of malicious Web sessions ***433***
Katerina Goseva-Popstojanova (West Virginia University, US), Goce Anastasovski (West Virginia University, US), Risto Pantev (Microsoft, US)

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Luigi Vincenzo Mancini (Universitá di Roma Sapienza, IT), Claudio Soriente (ETH Zurich, ES), Angelo Spognardi (University of Rome La Sapienza, IT), Antonio Villani (Universitá Sapienza, IT), Domenico Vitali (Universitá Sapienza, IT)

Network Caching

Room: 0201
Chair: TBD

Content redundancy in BitTorrent ***451***
António Homem Ferreira (INESC-ID/Instituto Superior Técnico, PT), Ricardo Lopes Pereira (INESC-ID/Instituto Superior Técnico, PT), Fernando Silva (INESC-ID/Instituto Superior Técnico, PT)

A Trace-Driven Analysis of Caching in Content-Centric Networks ***458***
Gareth Tyson (King's College London, UK), Sebastian Kaune (Technische Universität Darmstadt, DE), Simon Miles (King's College London, UK), Yehia El-khatib (Lancaster University, UK), Andreas Mauthe (Lancaster University, UK), Adel Taweel (King's College London, UK)

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Zhe Li (Institut Telecom – Telecom Bretagne, FR), Gwendal Simon (Institut Telecom – Telecom Bretagne, FR), Annie Gravey (Institut Telecom – Telecom Bretagne, FR)

On Performance of Cache Policy in Information-Centric Networking ***472***
Sen Wang (Tsinghua University, CN), Jianping Wu (Tsinghua University, CN), Jun Bi (Tsinghua University, CN)

17:00—18:30

Sensor Networks I

Room: 0101
Chair: TBD

Data Collection using Transmit-Only Sensors and a Mobile Robot in Wireless Sensor Networks ***479***
Baris Tas (University of Texas at San Antonio, US), Ali Tosun (University of Texas at San Antonio, US)

Emergency Cyber-Physical-Human Systems ***488***
Erol Gelenbe (Imperial College London, UK), Fang-Jing Wu (Nanyang Technological University, SG)

Let's Move: Adding Arbitrary Mobility to WSN Testbeds ***495***
Nils Aschenbruck (University of Osnabrück, DE), Jan Bauer (University of Bonn, DE), Jakob Bieling (University of Bonn, DE), Alexander Bothe (University of Bonn, DE), Matthias Schwamborn (University of Osnabrück, DE)

DACA: Data-Aware Clustering and Aggregation in Query-Driven Wireless Sensor Networks ***502***
Somaieh Bahrami (Sharif University of Technology, IR), Hamed Yousefi (Sharif University of Technology, IR), Ali Movaghar (Sharif University of Technology, IR)

Network Architecture I

Room: 0131
Chair: TBD

VNMBench: A Benchmark for Virtual Network Mapping Algorithms ***509***
Jin Zhu (University of Massachusetts, US), Tilman Wolf (University of Massachusetts, US)

Scalable NDN Forwarding: Concepts, Issues and Principles ***517***
Haowei Yuan (Washington University in St. Louis, US), Tian Song (Beijing Institute of Technology, CN), Patrick Crowley (Washington University in St. Louis, US)

Towards an Aggregation-aware Internet Routing ***526***
Yangyang Wang (Tsinghua University, CN), Jun Bi (Tsinghua University, CN), Jianping Wu (Tsinghua University, CN)

A Pipeline IP Lookup Architecture with Random Duplicate Allocation ***533***
Yi Wu (Sun Yat-sen University, CN), Ge Nong (Sun Yat-Sen University, CN)

MAC Protocols

Room: 0201
Chair: TBD

Scheduling Wireless Links with Successive Interference Cancellation ***540***
Olga Goussevskaia (UFMG, BR), Roger Wattenhofer (ETH Zurich, CH)

Understanding the FICA MAC Protocol in High Data Rate WLANs ***547***
Fatima Zarinni (Stony Brook University, US), Samir Das (Stony Brook University, US)

btFICA MAC Protocol for High Data Rate WLANs ***556***
Fatima Zarinni (Stony Brook University, US), Samir Das (Stony Brook University, US)

Tuning Fast Link Adaptation Algorithms for CSMA/CA- and CSMA/E2CA-based WLANs ***565***
Gabriel Martorell (Universitat de les Illes Balears, ES), Felip Riera-Palou (University of the Balearic Islands, ES), Guillem Femenias (University of the Balearic Islands, ES)

Wednesday, August 1st

8:30 –10:15

Keynote II

Title: Security and Privacy in Named-Data Networking
Speaker: Gene Tsudik, University of California/Irvine, USA:
Room: Audimax
Chair: TBD
Abstract: With the growing realization that current Internet protocols are reaching the limits of their senescence, a number of on-going research efforts aim to design potential next-generation Internet architectures. Although they vary in maturity and scope, in order to avoid past pitfalls, these efforts seek to treat security and privacy as both fundamental and initial requirements.

This talk will focus on security and privacy in one candidate next-generation Internet architecture called Named-Data Networking (NDN) – an instantiation of Information-Centric Networking approach. By stressing content dissemination, NDN is an be attractive and viable approach to many types of current and emerging communication models. It also incorporates some useful security and privacy features.

We will begin by considering communication privacy and anonymity in NDN and describe an NDN add-on (called ANDANA) that offers the functionality similar to TOR on today's Internet. Since resilience to Denial of Service (DoS) attacks that plague today's Internet is a major issue for any new architecture, we will discuss some initial research towards assessment and possible mitigation of DoS in NDN. After identifying and analyzing several new types of attacks, we investigate their variations, effects and counter-measures. Finally, we will discuss how to adapt NDN and its security features to environments other than content distribution, using the example of building automation.

10:45—12:15

Cellular Networks

Room: 0101
Chair: TBD

Handovers with Forward Admission Control for Adaptive TCP Streaming in LTE-Advanced with Small Cells *572*
Reuven Cohen (Technion, IL), Anna Levin (IBM, IL)

Joint Equalization and Phase Noise Tracking for Doubly Selective Channels *579*
Pedro Pedrosa (Instituto de Telecomunicações – Lisboa, PT), Rui Dinis (Instituto de Telecomunicações/UNINOVA/FCT-UNL, PT), Fernando Nunes (Instituto Superior Tecnico, PT)

Dynamic Interference Management in Femtocells *586*
Michael Lin (Pennsylvania State University, US), Tom La Porta (Penn State University, US)

Evolving Landscape of Cellular Network Traffic *595*
Han Liu (UC Davis, US), Chen-Nee Chuah (University of California, Davis, US), Hui Zang (Sprint, US), Sara Gatmir-motahari (Sprint, US)

Network Architecture II

Room: 0131
Chair: TBD

DiPIT: a Distributed Bloom-Filter based PIT Table for CCN Nodes *602*
Wei You (Orange Labs, FR), Bertrand Mathieu (Orange Labs, FR), Patrick Truong (Orange Labs, FR), Jean-Francois Peltier (Orange Labs, FR), Gwendal Simon (Institut Telecom – Telecom Bretagne, FR)

Leveraging Legacy Software in Clean-Slate Network Architectures *609*

Song Yuan (University of Kentucky, US), Onur Ascigil (University of Kentucky, US), James Griffioen (University of Kentucky, US), Ken Calvert (University of Kentucky, US)

A Resource Description Language with Vagueness Support for Multi-Provider Cloud Networks ***616***
Gregor Schaffrath (T-Labs (Deutsche Telekom) / TU Berlin, DE), Stefan Schmid (T-Labs & TU Berlin, DE), hiq Khan (NTT DOCOMO, Inc., DE), Anja Feldmann (TU-Berlin, DE)

End User Node Access to Application-Tailored Future Networks ***623***
Hans Wippel (Karlsruhe Institute of Technology (KIT), DE), Oliver Hanka (EADS Innovation Works, DE)

Network Performance I

Room: 0201
Chair: TBD

Evaluating end-user network benefits of peering with path latencies ***630***
Mohammad Ahmad (University of Central Florida, US), Ratan Guha (University of Central Florida, US)

Optimizing Network Performance using Weighted Multipath Routing ***637***
Junjie Zhang (Polytechnic Institute of New York University, US), Kang Xi (Polytechnic Institute of New York University, US), Liren Zhang (United Arab Emirates University, AE), H. Jonathan Chao (Polytechnic Institute of New York University, US)

Network Coding Aware Queue Management in Multi-Rate Wireless Networks ***644***
Nicola De Coppi, Jianxia Ning, George Papageorgiou, Michele Zorzi, Srikanth V. Krishnamurthy (UC Riverside) and Thomas La Porta (Penn State University)

Portable and Performant Userspace SCTP Stack ***651***
Brad Penoff (Google, US), Alan Wagner (University of British Columbia, CA), Irene Rüngeler (Münster University of Applied Sciences, DE)

13:30—15:00

Panel Discussion II

Topic: Privacy in the Age of Big Data
Moderator: Guevara Noubir
Panelists: TBD
Room: Audimax
Abstract: The pervasiveness of sensing and data collecting devices and systems (such as smart phones, cameras, GPS, street cameras, base stations), the low cost of data storage, and the widespread use of free online platforms for communications and storage of users data, is raising unprecedented privacy concerns. The panelist will present their perspective on these concerns, debate their criticality, and provide approaches to address them both from a research perspective and from the policy and legal side.

15:15—16:45

Sensor Networks II

Room: 0101
Chair: TBD

Efficient and Accurate Object Classification in Wireless Multimedia Sensor Networks ***660***
Hakan Oztarak (Middle East Technical University, TR), Turgay Yilmaz (Middle East Technical University, TR), Kemal Akkaya (Southern Illinois University Carbondale, US), Adnan Yazici (Middle East Technical University, TR)

On Breach Path Detection Reliability of Wireless Sensor Grids *667*
Mohamed Shazly (University of Alberta, CA), Ehab Elmallah (University of Alberta, CA), Janelle Harms (University of Alberta, CA)

Compressive Sensing for Efficiently Collecting Wildlife Sounds with Wireless Sensor Networks *674*
Javier Diaz (Zagaia Project - Mobile Linux Development Center (FUCAPI/INdT), BR), Juan Colonna (Federal University of Amazonas (UFAM), BR), Rodrigo Soares (Federal University of Minas Gerais, BR), Carlos Figueiredo (FUCAPI - Research and Technological Innovation Center, BR), Eduardo Nakamura (FUCAPI - Research and Technological Innovation Center, BR)

Priority Sensitive Event Detection in Hybrid Wireless Sensor Networks *681*
Kh Mahmudul Alam (Monash University, AU), Joarder Kamruzzaman (Monash University, AU), Gour Karmakar (Monash University, AU), Manzur Murshed (Monash University, AU)

Grid and Cloud Computing

Room: 0131
Chair: TBD

Resource allocation for virtual routers through Non-cooperative games *688*
Mohamed Said Seddiki (Higher School of Communication of Tunis, TN), Mounir Frikha (High School of Communication in Tunis, TN)

VNA: An Enhanced Algorithm for Virtual Network Embedding *694*
Sarang Bharadwaj Masti (IIT-Madras, IN), Serugudi Raghavan (IIT Madras, IN)

Grey-box Approaches for Performance Prediction in Map-Reduce based Data Analytics Platforms *703*
Selvi Kadirvel (University of Florida, US)

Toward A Genetic Algorithm Based Flexible Approach for the Management of Virtualized Application Environments in Cloud Platforms *712*
Omar Abdul-Rahman (Hokkaido University, JP)

Network Performance II

Room: 0201
Chair: TBD

Localization of Single Link-Level Network Anomalies *721*
Emna Salhi (IRISA, FR), Samer Lahoud (IRISA, University of Rennes 1, FR), Bernard Cousin (IRISA, University of Rennes 1, FR)

Localization of network performance problems with multi-level discrete tomography *730*
Sajjad Zarifzadeh (University of Tehran, IR), Constantine Dovrolis (Georgia Institute of Technology, US)

Topological Similarity-based Scheme for Large-scale Group Communication Services *739*
Yuehua Wang (Beihang University, CN)

A Novel Transmission Protocol in Two-hop Relay Systems When Interference Cancellation Is Not Applicable *746*
Yue Ma (Beijing University of Posts and Telecommunications, CN), Lihua Li (Beijing University of Posts and Telecommunications, CN), Qi Sun (Beijing University of Posts and Telecommunications, CN), Lei Song (Beijing University of Posts and Telecommunications, CN), Zhou Zhou (Beijing University of Posts and Telecommunications, CN)

17:00—18:30

Wireless LAN

Room: 0101
Chair: TBD

FIFS: Fine-grained Indoor Fingerprinting System *753*
Jiang Xiao (HKUST, HK), Kaishun Wu (HKUST, HK), Youwen Yi (Hong Kong University of Science and Technology, HK), Lionel Ni (Hong Kong University of Science and Technology, HK)

On the impact of Multi-channel Technology on Safety-Message Delivery in IEEE 802.11p/1609.4 Vehicular Networks *760*
Marco Di Felice (University of Bologna, IT), Ali J. Ghandour (American University of Beirut, LB), Hassan Artail (American University of Beirut, LB), Luciano Bononi (University of Bologna, IT)

MaxCD: Max-rate based Cooperative Downloading for Drive-Thru Networks *768*
Shengbo Yang (Nanyang Technological University, SG), Chai Kiat Yeo (Nanyang Technological University, SG), Bu Sung Lee (Nanyang Technological University, SG)

Practical Power and Rate Control for WiFi *775*
Thomas Huehn (Technical University Berlin, DE), Cigdem Sengul (TU-Berlin, DE)

Video and VOIP

Room: 0131
Chair: TBD

Construction Method of Overlapped Cluster-trees Considering Inter-node Distance for Resilient Video Streaming *782*
Tomoki Motohashi (Osaka University, JP), Akihiro Fujimoto (Osaka University, JP), Yusuke Hirota (Osaka University, JP), Hideki Tode (Osaka Prefecture University, JP), Koso Murakami (Osaka University, JP)

PPM - A Hybrid Push-Pull Mesh-Based Peer-to-Peer Live Video Streaming Protocol *790*
Adel Ghanbari (Sharif University of Technology, IR), Hamid Rabiee (Sharif University of Technology, IR), Mohammad Khansari (University of Tehran, IR), Mostafa Salehi (Sharif University of Technology, IR)

Cross-Layer Optimization and Effective Airtime Estimation for Wireless Video Streaming *798*
Mohammad Alsmirat (Wayne State University, US), Nabil Sarhan (Wayne State University, US)

The Impact of Evasion on the Generalization of Machine Learning Algorithms to Classify VoIP Traffic *805*
Riyad Alshammari (Dalhousie University, CA), Nur Zincir-Heywood (Dalhousie University, CA)

Thursday, August 2nd

8:30–10:15

Keynote III

Title: Let's Dash - Dynamic Adaptive Streaming over HTTP – An international MPEG standard for Internet adaptive bit-rate streaming video delivery
Speaker: Dr. Michael Luby, Qualcomm Inc., USA
Room: Audimax
Chair: TBD
Abstract: Recent studies conclude that mobile data traffic will grow by a factor of 26 between 2011 and 2016 and that by 2016 video traffic will account for at least two-thirds of the total. The popularity of

video also leads to dramatic numbers on the fixed internet: in North America, streaming entertainment video traffic contributes more than 50% of the downstream Internet traffic at peak periods.

One of the cornerstones of this success is the use of HTTP as the delivery protocol – the ubiquitous protocol for internet delivery. HTTP was not designed for streaming over diverse networks to diverse devices, and thus the end user experience provided by using HTTP alone can be poor. A popular approach to augment HTTP is the following: The provider offers the same video content in multiple quality/bitrate HTTP versions, and each client independently adapts to its network conditions by dynamically selecting and switching to the appropriate version to ensure continuous playback at the highest quality possible.

MPEG has taken the lead on defining a unified format for enabling Dynamic Adaptive Streaming over HTTP (DASH). MPEG-DASH, ratified in 2011 and published as a standard (ISO/IEC 23009-1) in April 2012, is an evolution of existing proprietary adaptive streaming technologies and addresses new requirements and use cases. With the completion of the MPEG-DASH standard, the industry is provided with an enabling standard for massively scalable distribution of high-quality streaming video over the internet, and the focus has now shifted towards deployment and productization of MPEG-DASH. Towards this end, the DASH Promoters Group (http://dashpg.org) was created to address interoperability and promotional activities. The group has rapidly grown to more than 60 industry players, including Microsoft, Netflix, Akamai, Samsung, Sony, Ericsson, Adobe, Cisco, Harmonic, Dolby and Qualcomm. The significant efforts currently under way to deploy MPEG-DASH in a wide range of contexts raises the expectation that MPEG-DASH will become THE format for dynamic adaptive streaming over HTTP.

In this talk, we provide an overview of the MPEG-DASH standard, how it can be used, and describe some of the activities of the DASH Promoters Group.

10:45—12:15

High Speed Networks

Room: 0101
Chair: TBD

Performance Analysis of Packet Capture Methods in a 10 Gbps Virtualized Environment ***813***
Michael Schultz (Washington University in Saint Louis, US), Patrick Crowley (Washington University in St. Louis, US)

Advance Bandwidth Reservation with End-to-End Performance Guarantee in High-performance Networks ***821***
Poonam Dharam (University of Memphis, US), Qishi Wu (University of Memphis, US)

Evaluating and Optimizing IP Lookup on Many core Processors ***828***
Peng He (Institute of Computing Technology Chinese Academy of Sciences, CN), Hongtao Guan (The Institute of Computing Technology of the Chinese Academy of Sciences, CN), Gaogang Xie (Institute of Computing Technology, Chinese Academy of Sciences, CN), Kavé Salamatian (LISTIC PolyTech, Université de Savoie Chambery Annecy, FR)

Multiadaptive sampling for lightweight network measurements ***835***
João Marco Silva (Universidade do Minho, PT), Solange Lima (University of Minho, PT)

Network Traffic and Security

Room: 0131
Chair: TBD

CUTE: traffic Classification Using Terms ***842***
Soheil Hassas Yeganeh (University of Toronto, CA), Milad Eftekhar (University of Toronto, CA), Yashar Ganjali (University of Toronto, CA), Ram Keralapura (Narus, US), Antonio Nucci (Narus inc., US)

Mongoose: Throughput Redistributing Virtual Worlds ***851***
Iain Oliver (University of St Andrews, UK), Alan Miller (University of St Andrews, UK), Colin Allison (University of St Andrews, UK)

Attack-Resistant Distributed Time Synchronization for Virtual Private Networks ***860***
Michael Rossberg (Ilmenau University of Technology, DE), Rene Golembewski (Ilmenau University of Technology, DE), Guenter Schaefer (Technische Universitaet Ilmenau, DE)

Source Address Filtering For Large Scale Network: A Cooperative Software Mechanism Design ***868***
Shu Yang (University of Tsinghua, CN), Mingwei Xu (Tsinghua University, CN), Dan Wang (The Hong Kong Polytechnic University, HK), Jianping Wu (Tsinghua University, CN)

13:30—15:00

Panel Discussion III

Cognitive Communications for Disaster Response
Chair: Alhussein Abouzeid, RPI
Panelists:
Room: Audimax

15:15—16:45

Sensors in Critical Applications

Room: 0101
Chair: TBD

Bidirectional ECG Monitoring with an Event Detection Policy Engine ***875***
Andrew Jurik (Johns Hopkins University Applied Physics Laboratory, US), Alfred Weaver (University of Virginia, US)

Secure and Scalable Cloud-based Architecture for e-Health Wireless sensor networks ***883***
Ahmed Lounis (University of Technology of Compiègne, FR), Abdelkrim Hadjidj (Université de Technologie de Compiègne, FR), Abdelmadjid Bouabdallah (Universite de Technologie - Compiegne, FR), Yacine Challal (Compiegne University of Technology, Heudiasyc lab., FR)

Behavior Rule Based Intrusion Detection for Supporting Secure Medical Cyber Physical Systems ***890***
Robert Mitchell (Virginia Tech, US), Ing-Ray Chen (Virginia Tech, US)

A New Scalable Key Pre-distribution Scheme for WSN ***897***
Walid Bechkit (Compiegne University of Technology (UTC), FR), Yacine Challal (Compiegne University of Technology, Heudiasyc lab., FR), Abdelmadjid Bouabdallah (Universite de Technologie - Compiegne, FR)

Pervasive Networking

Room: 0131
Chair: TBD

A New Localized Geometric Routing with Guaranteed Delivery on 3-D Wireless Networks ***904***
Jun Duan (Renmin University of China, CN), Donghyun Kim (North Carolina Central University, US), Wenping Chen (Renmin University of China, CN), Deying Li (Renmin University of China, CN)

Community Membership Management for Transient Social Networks ***911***
Lateef Yusuf (Georgia Institute of Technology, US), Umakishore Ramachandran (Georgia Institute of Technology, US)

Attribute Based Content Sharing in Mobile Adhoc Networks of Smartphones over WiFi ***918***
Thomas Georges Cyrille Kooh (University of Colorado at Boulder, US), Qin Lv (University of Colorado Boulder, US), Shivakant Mishra (University of Colorado, US)

Buddy Routing: A Routing Paradigm for NanoNets Based on Physical Layer Network Coding ***927***
Ruiting Zhou (University of Calgary, CA), Zongpeng Li (University of Calgary, CA), Chuan Wu (The University of Hong Kong, HK), Carey Williamson (University of Calgary, CA)

17:00—17:15

Closing Remarks

Room: Audimax
Chair: TBD