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Program

Monday, November 1

08:00 - 08:45

Registration

08:45 - 09:10

Opening Session

09:10 - 10:00

Invited talk: Prof. Stefan Fischer

Experimental Facilities for Wireless Sensor Networks - the European WISEBED approach

Abstract: Sensor network technology has been under investigation for several years now and has matured to a degree which allows for commercial real-world implementations at a large scale. Before taking the step to deployment, however, it is crucial to evaluate the system, because detecting faults during runtime is extremely costly especially for sensor networks - just imagine re-accessing an installation which has been deployed in a jungle or under water. While simulations have been an important evaluation tool for sensor network technology for a long time, it has also become clear that achieving results that reflect the reality to a high degree is extremely difficult. It will thus be of major importance to do real experiments with systems and applications just implemented before deploying it. For that reason, multipurpose testbeds are required, which allow testing of different aspects of a sensor network system, such as scalability, mobility, support for heterogeneity etc. The European project WISEBED is currently creating such a testbed by building a federation of several existing physical sensor networks throughout the world. In this talk, we'll present the general idea and structure of WISEBED and highlight specific features, such as wireless links which are an important means to create flexible and powerful experimentation environments.

Biography: Dr. Stefan Fischer is a professor for computer science at the University of Luebeck in Germany, and the director of the Institute for Telematics. There, he teaches courses in fields related to computer networks and distributed systems and applications. He received a doctoral degree in computer science from the University of Mannheim, Germany, in 1996. After a postdoctoral stay in Montreal, he held professor positions at the International University in Germany and the Technical University of Braunschweig. The focus of his research group (10 researchers) is on communication and application development in modern network environments, such as sensor networks.

10:00 - 10:30

Morning break

10:30 - 12:10

Modulation & Transceiver Techniques

On the Impact of Realistic Control Channel Constraints in UTRAN LTE TDD System

Jingxiu Liu (Nokia Siemens Networks, P.R. China); Jeroen Wigard (Nokia Siemens Networks, Denmark); Hao Guan (Nokia Siemens Networks, P.R. China); Daniela Laselva (Nokia Siemens Networks, Denmark); Frank Frederiksen (Nokia Siemens Networks, Denmark)

pp. 1-5

A Modulation Recognition Method Based on Carrier Frequency Estimation and Decision Theory

Dong Xu Liu (Beijing University of Aeronautics and Astronautics, P.R. China); Jinzhao Su (Beijing University of Aeronautics & Astronautics, P.R. China); Wei Wu (Beijing University of Aeronautics & Astronautics, P.R. China)

pp. 6-11

Joint Source and Relay Optimization for Parallel MIMO Relays Using MMSE-DFE Receiver

Apriana Toding (Curtin University, Australia); Muhammad R. A. Khandaker (Curtin University, Australia); Yue Rong (Curtin University, Australia)
pp. 12-16

Channel Coding and Network Coding

A Novel Structure of High Rate (3,L) Regular QC-LDPC Codes for Magnetic Recording Channels

Mongkol Kupimai (Rajamangala University of Technology Isan Thailand, Thailand); Virasit Imtawil (, Thailand); Anupap Meesomboon (, Thailand); Puripong Suthisopapan (, Thailand)
pp. 17-22

Degree Distribution of XORed Fountain Codes: Theoretical Derivation and Analysis

Lucie Nodin (INSA-Lyon, France); Anya Apavatjirut (INSA de Lyon, France); Claire Goursaud (INSA-Lyon, France); Jean-Marie Gorce (INSA-Lyon, France)
pp. 23-28

Transmission Scheduling for PHY-Layer Wireless Network Coding

Hiroyuki Yomo (Kansai University, Japan); Masaki Bandai (Sophia University, Japan); Takashi Watanabe (Shizuoka University, Japan); Sadao Obana (Advanced Telecommunication Research Institute International, Japan)
pp. 29-33

Ad Hoc & Sensor Network - Localization & Deployment

Modeling Satellite Positioning Errors in Different Configurations From End User's Viewpoint

Xiaoying Kong (University of Technologies, Sydney, Australia); Li Liu (The University of Sydney, Australia); Tich Phuoc Tran (University of Technology, Sydney, Australia)
pp. 34-39

Improved Area Estimates for Localization in Wireless Sensor Networks

Venkatesh A Pillai (National University of Singapore, Singapore); Winston K.G. Seah (Victoria University of Wellington, New Zealand); Yong Huat Chew (Institute for Infocomm Research, Singapore)
pp. 40-45

Efficient Sensor Node Deployment Schemes for AOFSN

Li-Mei Peng (Korea Advanced Institute of Science and Technology, Korea); Chan-Hyun Youn (Korea Advanced Institute of Science and Technology, Korea); Xinwan Li (Shanghai Jiao Tong University, P.R. China)
pp. 46-51

Experimental Evaluation of SKYMESH Using Terrestrial Nodes

Hironori Oka (Niigata University, Japan); Hiraku Okada (Saitama University, Japan); Kenichi Mase (Niigata University, Japan)
pp. 52-57

12:10 - 13:30

Lunch break

13:30 - 15:10

Antennas and Propagation

Topology Broadcast in Maritime Mesh Networks with Directional Antennas - A Practical

Approach

Sukanta Kumar Hazra (Institute for Infocomm Research, Singapore); Winston K.G. Seah (Victoria University of Wellington, New Zealand)

pp. 58-63

Compact Ultra-Wideband Metamaterial Antenna

Adam Alhawari (Universiti Putra Malaysia, Malaysia); Alyani Ismail (Universiti Putra Malaysia, Malaysia); Mohamad A Mahdi (University Putra Malaysia, Malaysia)

pp. 64-68

Radio Propagation Modelling in the Downlink LTE

Andrew Deroussent (University of Technology, Sydney, Australia); Kumbesan Sandrasegaran (University of Technology, Sydney, Australia); Huda Adibah Mohd Ramli (University of Technology, Sydney, Australia); Riyaj Basukala (University of Technology, Sydney, Australia)

pp. 69-72

Optical 1**Protocol Proxy Scheme for Emulating OSPF for IP+Optical Network Management**

Shunichi Tsunoda (The University of Electro-Communications, Japan); Nattapong Kitsuwat (The University of Electro-communications, Japan); Eiji Oki (The University of Electro-Communications, Japan); Takashi Miyamura (NTT, Japan); Kohei Shiimoto (NTT, Japan)

pp. 73-77

Multi-Region Fiber Sensing System Using High Time Resolution Tunable Pulse Correlation OTDR Technique

Xunjian Xu (Kochi University of Technology, Japan); Koji Nonaka (Kochi University of Technology, Japan)

pp. 78-82

Adaptive Intentional Connection Rerouting for Traffic Grooming in WDM Mesh Networks with Biological Attractor Selection

Yan Li (City University of HongKong, P.R. China); Jianping Wang (City University of Hong Kong, Hong Kong); Yun Xu (University of science and Technology of China, P.R. China)

pp. 83-88

Single and Dual Physical Link Failures Stability Effect on Degree Three WDM Networks

Jose M Gutierrez (Aalborg University, Denmark); Konstantinos Georgakilas (Athens Information Technology, Greece); Tahir M Riaz (Aalborg University, Denmark); Kostas Michael Katrinis (Athens Information Technology (AIT), Greece); Jens Myrup Pedersen (Aalborg University, Denmark); Anna Tzanakaki (AIT, Greece); Ole B Madsen (Aalborg University, Denmark)

pp. 89-94

CDMA Technology and Synchronisation**Approximations for Distributions of Aggregate Interference in Spectrum Sharing Systems**

Rachita Dahama (The University of Auckland, New Zealand); Kevin W Sowerby (The University of Auckland, New Zealand); Gerard B. Rowe (University of Auckland, New Zealand)

pp. 95-100

NPSK Based DS-SS Acquisition Performance in Presence of Fast Fading

Ramin Vali (The University of Auckland, New Zealand); Stevan Mirko Berber (University of Auckland, New Zealand)

pp. 101-105

Suppression of Synchronization Errors in OFDM Based Carrier Aggregation System

Xiupei Zhang (Chungbuk National University, Korea); Heung-Gyoon Ryu (Chungbuk National University, Korea); Jin-Up Kim (ETRI, Korea)

pp. 106-111

A Novel Femtocell Open Access Mechanism in the Uplink in the CDMA System

Ben Niu (Tsinghua University, P.R. China); Yunzhou Li (Tsinghua University, P.R. China);
Xiaofeng Zhong (Tsinghua University, P.R. China); Shidong Zhou (Tsinghua University, P.R.
China)
pp. 112-117

Wisebed Tutorial - Dr. Stefan Fischer, Dr. Dennis Pfisterer

Sensor network technology has been under investigation for several years now and has matured to a degree which allows for commercial real-world implementations at a large scale. Before taking the step to deployment, however, it is crucial to evaluate the system, because detecting faults during runtime is extremely costly especially for sensor networks. While simulations have been an important evaluation tool for sensor network technology for a long time, it has also become clear that achieving results that reflect the reality to a high degree is extremely difficult. It will thus be of major importance to also test a system just implemented before deploying it.

There is variety of hardware and software to choose from, and almost all of them are easy to set up and use. Still there is a major issue that has not been sufficiently addressed in the past. The sensor node brands are very different in their capabilities. Consequently, the software running on these systems is very different on the various nodes. Where algorithms are implemented, they are hard to share and compare, as implementations cannot be easily ported to new platforms.

To address the aforementioned challenges, the European project WISEBED (<http://www.wisebed.eu>) provides

- an infrastructure of interconnected, heterogeneous testbeds of large-scale wireless sensor networks for research purposes,
- software (Wiselib) for implementing applications for heterogeneous sensor networks, and
- a language (WiseML) for describing and executing experiments as well as for storing traces of such experiments.

WISEBED is open for everybody (absolutely not restricted to Europe) and represents a powerful platform for large-scale experimentation. The goal of this tutorial is to familiarize the participants with the WISEBED testbed federation, the Wiselib, and WiseML.

In the first session, we will

- introduce the architecture of the WISEBED testbed federation,
- present WiseML and show how run experiments (including description of experiments, access the testbed, executing an experiment, and collecting its results), and
- introduce the concepts and architectural details of the Wiselib, which is a generic algorithms library written in C++ that runs on a simple interfaces to the algorithm developer, with a unified API and ready implementations.

Second, in a hands-on session, attendees will

- implement a WSN application
- deploy it on heterogeneous hardware of the WISEBED testbed federation,
- and collect the results in WiseML.

Course prerequisites:

- To avoid installation of compilers and tools, participants will use a virtual machine image containing a complete development environment. Participants should have a PC with a working installation of VirtualBox (<http://www.virtualbox.org/>) or VMWare Player (<http://www.vmware.com/products/player/>) and about 2 GB of free disk space.
- Attendees are expected to have knowledge of WSN programming in general and the C++ programming language.

Teachers

The tutorial will be given by Dr. Dennis Pfisterer and Prof. Dr. Stefan Fischer, both from the University of Lübeck, Germany. While Stefan Fischer is the administrative coordinator of WISEBED, Dennis Pfisterer acts as the technical manager.

15:10 - 15:30

Afternoon tea

15:30 - 16:10

Invited Talk: Dr. Masahiko Jinno

Elastic Optical Path Networks: Toward a More Efficient and Scalable Optical Layer

Abstract: The efficient use of network resources is always a major concern of network operators who face strong pressure to

reduce the per unit bandwidth cost as well as network power consumption. Since there is growing recognition that we are rapidly approaching the physical capacity of standard optical fiber, it becomes ever-increasingly important to make better use of optical network resources to accommodate the ever-growing traffic demand to support the future Internet and services in 2020. In the presentation, we will introduce a spectrally-efficient and scalable elastic optical path network where the required minimum spectral resources are adaptively allocated to an optical path based on various network conditions as a candidate to address the capacity crunch challenge. Then we will present the benefits of elastic optical path networks from the viewpoints of rate-adaptive, distance-adaptive, and availability-adaptive spectral resource allocation. Finally, we will provide possible adoption scenarios from current rigid optical networks to elastic optical path networks.

Biography: In 1986, Masahiko Jinno joined Nippon Telegraph and Telephone Corporation (NTT), Yokosuka, Japan where he studied ultra-fast optical signal processing for high-capacity optical time division multiplexing transmission systems. From 1993 to 1994, he investigated optical sampling and optical time-domain reflectometry as a guest scientist at the National Institute of Standards and Technology (NIST), Boulder, Colorado, USA. He received his Ph.D. degree in engineering from Osaka University, Osaka, Japan in 1995 for his work on ultra-fast optical signal processing based on nonlinear effects in optical fibers. From 1996, he conducted his pioneering research on ultra-wideband DWDM transmission systems in the L-band and S-band, as well as reconfigurable optical add drop multiplexing systems. In 2003, after gaining two years of experience in the development of wireless and wire-line access systems at NTT West, he started research on photonic networks with a focus on generalized multiprotocol label switching and application-aware photonic networking at the NTT Network Innovation Laboratories.

His current interests include architecture, design, management, and control of spectrally-efficient elastic optical networks, bandwidth-agnostic wavelength crossconnects, optical OFDM based flexible transceivers, and relevant device technologies.

15:30 - 17:30

Wireless Networks

Multi-User and Channel Dependent Scheduling Based Adaptive Power Saving for LTE and Beyond System

Liu Liu (DOCOMO Beijing Communications Laboratories Co., Ltd, P.R. China); Xiaoming She (DOCOMO Beijing Communications Laboratories Co., Ltd., P.R. China); Lan Chen (DOCOMO Beijing Communication Laboratories Co., Ltd, P.R. China)

pp. 118-122

From Macrocell to Microcell System to Offer Road Communication to Vehicle

Takahiko Yamada (Ritsumeikan University, Japan); Thanh-Hoa Phan (Ritsumeikan University, Japan)

pp. 123-128

D-Proxy: Reliability in Wireless Networks

David E Murray (Murdoch University, Australia); Terry Koziniec (Murdoch University, Australia); Michael Dixon (Murdoch University, Australia)

pp. 129-134

MBER-BER Uplink Power Control Method in Cellular Radio Systems

Chih-Kai Wang (Industrial Technology Research Institute, Taiwan); Cheng-Ming Chen (Industrial Technology Research Institute, Taiwan); Ping-Heng Kuo (Industrial Technology Research Institute, Taiwan); Pangan Ting (Tsing Hua University, Taiwan)

pp. 135-140

Network Control and Analysis

Application of Kolmogorov Complexity in Anomaly Detection

Arijit Ukil (TCS, India)

pp. 141-146

An Analysis of the P2P Traffic Characteristics on File Transfers Between Prefectures and Between Autonomous Systems in the Winny Network

Takashi Koizumi (Tokyo University of Agriculture and Technology, Japan); Masahiro Yoshida (University of Tokyo, Japan); Satoshi Ohzahata (The University of Electro-Communications, Japan); Konosuke Kawashima (Tokyo University of Agriculture and Technology, Japan)

pp. 147-152

A TCP Congestion Control Method for Real-Time Communication Based on Channel Occupancy of a Wireless LAN

Hirai Toshiyuki (Tokyo University of Agriculture and Technology, Japan); Satoshi Ohzahata (The University of Electro-Communications, Japan); Konosuke Kawashima (Tokyo University of Agriculture and Technology, Japan)

pp. 153-158

On Increasing the Spectral Efficiency More Than 100% by User-In-The-Control-Loop

Rainer Schoenen (RWTH Aachen University, Faculty 6, Germany)

pp. 159-164

Wisebed Tutorial Continued

16:10 - 17:30

Optical 2

Recovery Time of Degraded Throughput in Best-Effort CWDM Networks with ROADMs

Shogo Kawai (Osaka Prefecture University, Japan); Shun Okimitsu (Osaka Prefecture University, Japan); Kazuto Nakai (Osaka Prefecture University, Japan); MD. Nooruzzaman (Osaka Prefecture University, Japan); Osanori Koyama (Osaka Prefecture University, Japan); Yutaka Katsuyama (Osaka Prefecture University, Japan)

pp. 165-170

Available Bandwidth Estimation for Gbps-Class Applications Using 10-Gbps Network Interface Card's Hardware Assistance

Kenji Shimizu (NTT Network Innovation Laboratories, Japan); Katsuhiro Sebayashi (Nippon Telegraph and Telephone Corp., Japan); Seiki Kuwabara (Nippon Telegraph and Telephone Corp., Japan); Mitsuru Maruyama (Nippon Telegraph and Telephone Corp., Japan)

pp. 171-176

Evaluation of Fiber Delay Line Buffers with Traffic Shaping Function for Optical Packet Networks

Takashi Ozu (Graduate School of Informatics, Kyoto University, Japan); Tatsuro Takahashi (Kyoto University, Japan)

pp. 177-182

Dynamic Time Based Burst Assemble Scheme to Reduce Energy Consumption in OBS Network with Low-Power Idle

Dong-Ki Kang (Chonbuk National University, Korea); Won-Hyuk Yang (Chonbuk National University, Korea); Jae-Young Lee (Chonbuk National University, Korea); Young-Chon Kim (Chonbuk National University, Korea)

pp. 183-187

18:00 - 20:00

Conference reception

Tuesday, November 2

08:30 - 09:15

Invited talk: Prof. Rudolf Mathar

Conventional, less conventional and optimum signalling

In conventional modulation, blocks of bits are mapped onto complex symbols which jointly with a pulse shaping function determine the baseband signal. Regular patterns on a circle (phase-shift keying) or on a grid (quadrature amplitude modulation) are usually preferred in order to keep the receiver complexity low. The distribution which governs the selection of signalling points is not considered in this approach. In this talk we first derive capacity achieving input distributions which strongly depend on the noise distribution. Finally, optimum signalling means not only to optimize the input distribution but also to select the position of signalling

points in a bounded n -dimensional set such that channel capacity is maximized. Boundedness refers to the fact that besides possible average power constraints also peak power constraints apply, a requirement obviously needed for practical applications. We present some recent results on this problem which show that increasing transmission power not necessarily increases channel capacity.

Biography: Rudolf Mathar received his Diploma and Ph.D. degree in mathematics from RWTH Aachen University in 1978 and 1981, respectively. Previous positions include a research fellowship at Augsburg University and a lecturer position at the European Business School. In 1989, he joined the Faculty of Natural Sciences at RWTH Aachen as a Professor of Stochastics and Computer Science. He has held the International IBM Chair in Computer Science at Brussels Free University in 1999. In spring 2001 and 2008, he was invited as Erskine Fellow to Canterbury University, Christchurch, New Zealand.

In 2002, he was the recipient of the prestigious Vodafone D2 Innovation Award. In 2004 he was appointed head of the Institute for Theoretical Information Technology in the Faculty of Electrical Engineering and Information Technology at RWTH Aachen University. His research interests include mobile communication systems, particularly optimization, resource allocation and access control, as well as radio network information theory.

From 2005 to 2009 he was associate editor for Information Theory of the European Transactions on Telecommunications (ETT). He serves on the editorial board of the International Journal of Mobile Network Design and Innovation. He is presently chairman of ITG/VDE Technical Committee 5.1, Information and System Theory. He is co-founder of two spin-off enterprises in the area of communications and publishes extensively in IEEE journals and conferences.

09:15 - 10:00

Invited talk: Prof. Phuoc Tran-Gia

Federation Issues in Experimental Facilities for Future Internet Research

Abstract: Currently, we are witnessing fast-moving activities towards next generation network. A number of experimental facilities are initiated in several countries, e.g. in the US, EU, Japan etc. The talk will present basic approaches and contributions of the project German-Lab (G-Lab), which is funded by the German Federal Ministry of Research and Education (BMBF). This project is aiming to build a cluster in Germany to foster experimentally driven research to exploit future internet technologies. Current activities and problems in the course of federating those experimental platforms will also be addressed.

Biography: Phuoc Tran-Gia is professor and director of the Institute of Computer Science, and currently Dean of the Faculty of Mathematics and Computer Science, the University of Wuerzburg, Germany. Previously he was at academia in Stuttgart, Siegen (Germany) as well as industries at Alcatel and IBM Zurich Research Laboratory (Zurich, Switzerland). Professor Tran-Gia was active in several management committees of European research projects (COST, NoE and STREP). He is also founding director of the multi-university Nortel's "Center of Network Optimization". He is consultant and cooperation project leader with Siemens (Munich, Berlin), Nortel (Texas), T-Mobile International (Bonn), France Telecom/Orange Group (Belfort), Datev (Nuremberg), Bosch (Stuttgart). Prof. Tran-Gia published 2 books and around 100 papers in international journals, seminars and workshops. His current research areas include architecture and performance analysis of communication systems, and planning and optimization of communication networks. He currently works with the European Union authorities and the German Ministry of Research and Education on funding strategies and initiatives towards Next Generation Internet. He is coordinator of the project German-Lab (G-Lab), which is funded by BMBF, aiming to foster experimentally driven research to exploit future internet technologies.

10:00 - 10:30

Morning break

10:30 - 12:10

Ad Hoc & Sensor Network - Energy Efficient Network

Reliable Data Delivery in Low Energy Ad Hoc Sensor Networks

Khaled Daabaj (Murdoch University, Australia); Michael Dixon (Murdoch University, Australia);
Terry Koziniec (Murdoch University, Australia); David E Murray (Murdoch University, Australia)
pp. 188-193

Optimal Reliable and Energy Aware Inter-Cluster Communication in Wireless Sensor Networks

Anwar Sadat (Monash University, Australia); Gour Chandra Karmakar (Monash University, Australia)
pp. 194-199

Parametric Protocol for Energy Efficient Cluster Head Selection (PPEECS) in WSNs

Mayank Khulbe (Jaypee Institute of Information Technology, India); Piyush Srivastava (Jaypee

Institute of Information Technology, India); Roop C Jain (JIIT University, India)
pp. 200-203

Modeling the Energy Performance of Object Tracking in Wireless Sensor Network Using Dual-Sink

Chen Jiehui (Waseda University, Japan); Mariam B. Salim (Waseda University, Japan); Mitsuji Matsumoto (Waseda University, Japan)
pp. 204-209

Utilization-Aware Dynamic GTS Allocation Scheme in IEEE 802.15.4

Hyung Wook Cho (Sungkyunkwan University, Korea); Sueng Jae Bae (Sungkyunkwan University, Korea); Min Young Chung (Sungkyunkwan University, Korea)
pp. 210-214

Coding and DSP

Practical Training Data for Support Vector Machine Receiver in a Chaos-Based CDMA

Johnny Wei-Hsun Kao (University of Auckland, New Zealand)
pp. 215-220

Performance Evaluation of the Code Acquisition System Using Pseudo-Ternary M-Sequences

Ryo Enomoto (Ibaraki University, Japan); Hiromasa Habuchi (Ibaraki University, Japan)
pp. 221-225

Thai-English Spam SMS Filtering

Chaiyaporn Khemapatapan (Dhurakij Pundit University, Thailand)
pp. 226-230

Analysis of the RLMS Adaptive Beamforming Algorithm Implemented with Finite Precision

Jalal Abdulsayed Srar (Curtin University of Technology, Australia); Kah Seng Chung (Curtin University of Technology, Australia); Ali Mansour (Curtin University, Australia)
pp. 231-236

OFDM Technology

Channel Feedback Reduction Schemes for Opportunistic Scheduling in Multicast OFDMA Systems

Soomin Ko (Seoul National University, Korea); Yung Jun Yoo (Korea Telecom, Korea); Byeong Gi Lee (Seoul National University, Korea)
pp. 237-242

Distributed Power Allocation for Efficient Inter-Cell Interference Management in Multi-Cell OFDMA Systems

Soomin Ko (Seoul National University, Korea); Hanbyul Seo (LG Electronics, Korea); Hojoong Kwon (Seoul National University, Korea); Byeong Gi Lee (Seoul National University, Korea)
pp. 243-248

Downlink Resource Management for OFDMA Femtocells Using Stochastic Subchannel Allocation

Hyunduk Jung (Yonsei University, Korea)
pp. 249-254

Analysis of Proportional Fair Scheduling in OFDMA Systems with Delay QoS Constraints

Seongwoo Ahn (Samsung Electronics, Korea); Seokwon Lee (Yonsei University, Korea); Kyungho Kim (Samsung Electronics, Korea); Daesik Hong (Yonsei University, Korea)
pp. 255-260

Panel Session - Performance of Future Internet Architecture

Performance Issues in Future Internet Architectures – Myths and Realities The background of the topic is found in recent discussions at Future Internet Cluster Workshops (organized by the European Network of Excellence Euro-NF on behalf of the European Commission) on the properties of future internet architectures, such as issues of isolation and transparency. In particular, questions arose to which extend the fact that a resource is virtual becomes visible to the end user, how performance of future architectures can be evaluated (through experimentation, measurements, simulations, and performance modeling and analysis), and which experience is so far available in the domain. This panel discussion will try to shed light on approaches and insights to performance issues in future internet architectures. Members: Nevil Brownlee, University of Auckland, NZ Krysztof Pawlikowski, University of Canterbury, NZ Max Ott, NICTA, AU Phuoc Tran-Gia, University of Würzburg, DE Organiser: Markus Fiedler, Blekinge Institute of Technology, SE; Euro-NF

12:10 - 13:30

Lunch break

13:30 - 14:20

Invited talk: Prof. Chan-Hyun Youn

Metabolic Syndrome Estimation with High Precision Sensing Unit

Abstract: We discuss sensor-integrated system model for metabolic syndrome estimation with workflow management system, which measures a temperature variation using invasive method, which is able to produce an accurate result of measurement through compensation of a measurement result and environment via simulation. Moreover, we discuss metabolic syndromes prediction technology based on measurement of mitochondrial activity by using high precision sensing system and integrated simulation model of human energetic with high performance workflow computing platform. To identify metabolic syndrome, we will build a sensor integrated chamber that has network interface to deliver analysis results of human cells, annotation data from public hospital, and metabolic data. Using our heat metabolism measuring system, we can evaluate functionality of human mitochondria and analyze energy metabolism.

Biography: Chan-Hyun Youn received BS and MS degrees in Electronics Engineering from Kyungpook National University, Taegu, Korea, in 1981 and 1985, respectively. He also received a Ph.D. in Electrical and Communications Engineering from Tohoku University, Japan, in 1994. He served at Korean Army as a communications officer, First Lieutenant, from 1981 to 1983. Before joining the University, from 1986 to 1997, he was the leader of high-speed networking team at Korea Telecom (KT) Telecommunications Network Research Laboratories. Where he had been involved in the research and developments of Centralized Switching Maintenance System (CSMS), Maintenance and Operation system for Various ESS's (MOVE) system, high-speed networking, and HAN/B-ISDN network testbed. Especially, he was a principal investigator of high-speed networking projects including ATM technical trial between KT and KDD, Japan, Asia-Pacific Information Infrastructure (APII) testbed, Korea Research and Education Network (KOREN) and Asia-Pacific Advanced Network (APAN), respectively. In 1997, he joined Information and Communications University (ICU) where he was a dean of office of planning affairs and a director of research and industrial cooperation group in 2006 and 2007, respectively. He also was a visiting professor at MIT in 2003 and has been engaged in the development of Physio-Grid system with Prof. R.G. Mark's group in LCP (Laboratory for Computational Physiology) of MIT since 2002. He was a Director of Grid Middleware Research Center, ITRC (IT Research Center) of MKE (Ministry of Knowledge Economy) and was a vice president of Grid Forum Korea. In the ITRC center, he has been engaged in development of the Policy Quorum-based Grid middleware for QoS-constrained applications and Physio-Ubiquitous Grid system for e-Healthcare. Since 2009, he has been a professor at Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea. He is serving for the technical program committees in many international conferences. Currently, he is interested in the Grid computing, Cloud, computing middleware, advanced e-Healthcare system and application services, network management, and advanced network systems. He was a recipient of IEICE PAACS friendship prize, Japan, in 1994. Now, he is an editor-in-chief of Korea Information Processing Society (KIPS) and a member of IEEE, KICS, KIPS, and IEICE, respectively.

13:30 - 15:10

Tutorial - Introduction to NGN and Future Networks - Prof. Koichi Asatani

Introduction to NGN and Future Networks

Abstract: Next Generation Network (NGN) is designed to be capable of QoS management and controls like in traditional telecommunication networks and to support economical, versatile multi-media applications like those on the current Internet. NGN also provides fixed-mobile convergence (FMC) with generalized mobility, and horizontal and vertical roaming as well as improved security. The concepts and architecture of the Next Generation Networks (NGN) are described. NGN voice and Internet services are attractive from the view points of service flexibility and cost effectiveness and the capability of integrating third-party applications with high dependability and high security. The current status of NGN implementation in a commercial offer by NTT (Nippon Telegraph and Telephone Corporation) is touched upon. Issues for the global evolution of NGN are also described, such as technical key issues, global standards and regulations.

In addition to NGN, this tutorial also presents the state of the art on Future Networks. Future Networks are being developed in USA, Europe and Asia. ITU-T also started to discuss the standardization issues related to Future Networks, although Future Networks are assumed to be realized in a decade or so.

Biography: Koichi Asatani received his B.E.E.E., M.E.E.E. and Ph. D degrees from Kyoto University in 1969, 1971 and 1974, respectively. From 1974 to 1997, Dr. Asatani was engaged in R&D on optical fiber communication systems, hi-definition video transmission systems, FTTH, ISDN, B-ISDN, ATM networks, IP networks and their strategic planning in NTT. Currently he is Dean, Department of Computer Science and Communications Engineering, Kogakuin University, and a visiting professor, Graduate School of Global Information and Telecommunication, Waseda University, both in Tokyo, Japan. He is a Fellow of IEEE and a Fellow of IEICE. He was appointed as a distinguished lecturer of IEEE Com Soc for 2007-2009.

He is a founder of Communications QoS, Reliability and Performance Modeling series symposium at ICCs and Globecom. He served as co-chair for this symposium series at ICCs and Globecom for 2002-2004. He is Ex-Chair and Advisory Board Ex-Chair Emeritus of IEEE Technical Committee on Communication Quality and Reliability (CQR-TC), Feature Editor on Standards (1993-1999), Senior Technical Editor/Technical Editor of IEEE Communications Magazine, and Technical Editor on Broadband Technology of IEEE Communications Survey. From 1988 through 2000, he served as Vice-Chairman of ITU-T SG 13 (formerly CCITT SG XVIII), responsible for digital networks including GII, IP networks and NGN. He is serving as Chair for National Committee on Next Generation Networks in Japan, and also as Chair, R&D and Standardizations Working Group, Next Generation IP Network Promotion Forum.

He has published more than fifty papers, and gave more than seventy talks including keynotes? invited talks and tutorials at international conferences such as ICCs and Globecom. He is author or co-author of nineteen books including "Quality and Performance Designs of Telecommunication Networks"(IEICE, 1993, in Japanese), "Introductions to ATM Networks and B-ISDN" (John Wiley and Sons, 1997), "Multimedia Communications Networks - Technologies and Services" (Artech House, 1998), "Multimedia Communications" (Academic Press, 2001), "Information and Communication Technology and Standards" (Denki Tsushin Shinko Kyokai, in Japanese, 2006), "Introduction to Information Networks-Fundamentals of Telecom & Internet Convergence, QoS, VoIP and NGN-" (Corona-sha Publishing Inc., in Japanese, 2007), and Handbook of Enterprise Integration (CRC Press, 2009). His current interests are Information Networks and Network Architectures including Broadband networking, Internetworking, IP telephony, NGN, Future Networks and their QoS aspects.

14:20 - 15:10

Invited talk: Prasan de Silva

Multi Connection and Offloading: Trends in standardisation

Biography: Prasan de Silva, has worked for Telecom NZ covering the period 1996 till present in various roles in both fixed and mobile. His mobile experience covers AMPS, D-AMPS, cdma2000 and UMTS networks. His research interests are in IP based mobility management protocols and all-IP wireless architectures. He has a B.E (Hons) and M.E, both from Canterbury University, Christchurch, New Zealand.

15:10 - 15:30

Afternoon tea

15:30 - 17:30

Ad Hoc & Sensor Network - Protocols & Routing

A Contender-Aware Backoff Algorithm for CSMA Based MAC Protocol for Wireless Sensor Network

Miraz Mamun (Monash University, Australia); Gour Chandra Karmakar (Monash University, Australia); Joarder Kamruzzaman (Monash University, Australia)
pp. 261-266

Implementation of Enhanced Lightweight Medium Access (eL-MAC) Protocol for Wireless Sensor Network

Liza A. Latiff (University Technology Malaysia, Malaysia); Rozeha A. Rashid (Universiti Teknologi Malaysia, Malaysia); Sharifah Hafizah Syed Ariffin (Universiti Teknologi Malaysia, Malaysia); Wan Mohd. Ariff Wan Embong (Telematics Research Group, Malaysia); Norsheila Fisal (Universiti Teknologi Malaysia, Malaysia); Anthony Lo (Delft University of Technology, The Netherlands)
pp. 267-272

An Adaptive and Multi-Service Routing Protocol for Wireless Sensor Networks

Jaydip Sen (Tata Consultancy Services, India)
pp. 273-278

Adaptive Cluster-Based Approach for Reducing Routing Overheads in MANETs

Er Inn Inn (National University of Singapore, Singapore); Winston K.G. Seah (Victoria University of Wellington, New Zealand)

pp. 279-284

Analytical Modeling of Multi-Service Systems with Multi-Service Sources

Mariusz Glabowski (Poznan University of Technology, Poland); Maciej Sobieraj (Poznan University of Technology, Poland); Maciej Stasiak (Poznan University of Technology, Poland)

pp. 285-290

Coding for MIMO and Relays

Dirty Paper Coding Based Optimal MIMO Relay Communications

Muhammad R. A. Khandaker (Curtin University, Australia); Yue Rong (Curtin University, Australia)

pp. 291-296

Improved Multicanonical Algorithm for Outage Probability Estimation in MIMO Channels

Pushpika Wijesinghe (University of Western Sydney, Australia); Upul Gunawardana (University of Western Sydney, Australia); Ranjith Liyanapathirana (University of Western Sydney, Australia)

pp. 297-301

Subspace Compressive GLRT Detector for Airborne MIMO Radar

Khawza I Ahmed (Staffordshire University, United Kingdom); Sreedevi Kothuri (Staffordshire University, United Kingdom); Mohammad N Patwary (Staffordshire University, Stafford, United Kingdom); Mohamed Abdel-Maguid (Staffordshire University, United Kingdom)

pp. 302-306

Space Frequency Block Coding with Grouped Phase Rotation for Asymmetric MIMO-OFDM System

Akinori Nakajima (Mitsubishi Electric Corporation, Japan); Kenichiro Tanaka (Mitsubishi Electric Corporation, Japan); Akinori Ohashi (Mitsubishi Electric Corporation, Japan); Hiroshi Hattori (Mitsubishi Electric Corporation, Japan); Akihiro Okazaki (Mitsubishi Electric Corporation, Japan); Hiroshi Kubo (Mitsubishi Electric Corporation, Japan)

pp. 307-312

MIMO Technology and Space-time Coding

MIMO Capacity Estimation Based on Single and Dual-Polarization MIMO Channel Measurements

Shinobu Nanba (KDDI R&D Laboratories, Inc., Japan); Noriaki Miyazaki (KDDI R&D Laboratories, Inc., Japan); Yuuki Hirota (KDDI R&D Laboratories, Inc., Japan); Yoji Kishi (KDDI R&D Laboratories, Japan)

pp. 313-318

Investigation on Resource Assignment and Power Control Schemes for Uplink MU-MIMO in Multi-Cell Environments for LTE/LTE-Advanced

Daisuke Nishikawa (NTT DOCOMO, Inc., Japan); Teruo Kawamura (NTT DOCOMO, Inc., Japan); Yoshihisa Kishiyama (NTT DOCOMO, Inc., Japan); Takehiro Nakamura (NTT DoCoMo, Inc., Japan)

pp. 319-323

Link Adaptation of MIMO-OFDM Systems Using Hidden Markov Model for High Speed Railway

Kun-Yi Lin (National Taipei University of Technology, Taiwan); Hsin-Piao Lin (National Taipei University of Technology, Taiwan); Ming-Chien Tseng (Industrial Technology Research Institute, Taiwan)

pp. 324-328

Tutorial - Introduction to NGN and Future Networks Continued

19:00 - 22:00

Conference dinner

Wednesday, November 3

08:30 - 09:15

Invited talk: Prof. Franco Davoli

Energy Efficiency in the Future Internet: Current Status and Trends

Abstract: The concept of energy-efficient networking has begun to spread in the past few years, gaining increasing popularity. Besides the widespread sensitivity to ecological issues, such interest also stems from economic needs, since both energy costs and electrical requirements of telcos and Internet Service Providers infrastructures around the world show a continuously growing trend. The talk explores current perspectives in power consumption for next generation networks, and examines power saving optimization techniques at the levels of the individual networking devices and of the network itself. Approaches to re-engineering, dynamic adaptation, and sleeping/standby methodologies will be briefly surveyed, and the future trends in energy-aware networking will be highlighted.

Biography: Franco Davoli received the "Laurea" degree in Electronic Engineering in 1975 from the University of Genoa, Italy. Since 1990 he has been Full Professor of Telecommunication Networks at the University of Genoa, at the Department of Communications, Computer and Systems Science (DIST). His current research interests are in dynamic resource allocation in multiservice networks, wireless mobile and satellite networks, multimedia communications and services in distributed computing environments, and energy-efficient networking. He has co-authored over 250 scientific publications in international journals, book chapters and conference proceedings. He is a member of the Editorial Board of the International Journal of Communication Systems (Wiley), Studies in Informatics and Control, and Simulation - Transactions of the SCS. In 2004, he was the recipient of an Erskine Fellowship from the University of Canterbury, Christchurch, New Zealand, as Visiting Professor. He has been Principal Investigator in a large number of research projects and has served in several positions in the Italian National Consortium for Telecommunications (CNIT), an independent research organization joining 36 universities all over Italy. He was one of the founders of the CNIT National Laboratory for Multimedia Communications in Naples, Italy, which he led for the term 2003-2004, and Vice-President of the CNIT Management Board for the term 2005-2007. He is a Senior Member of the IEEE.

09:15 - 10:00

Invited talk: Prof. Stan Skafidas

Millimeter Wave Wireless Communication Systems: Are we there yet?

Abstract: Millimeter wave wireless systems promise high data rates at low cost and small form factors. This talk will discuss the latest developments in the field of integrated millimeter wave transceivers and challenges in producing integrated, low cost and robust transceivers.

Biography: Professor Stan Skafidas, from the Department of Electrical and Electronic Engineering and NICTA's Victoria Research Lab, leads our research in nanoelectronics, as well as being the course coordinator for the Master of Nanoelectronic Engineering program. Professor Skafidas received a PhD from the Department of Electrical and Electronic Engineering at the University of Melbourne in 1997. Before joining NICTA in 2004, he was Chief Technology Officer at Bandspeed, a company based in Austin Texas, which designs and manufactures semiconductor products for enterprise class wireless systems. At Bandspeed, Professor Skafidas co-invented Adaptive Frequency Hopping – an important standard component in Bluetooth devices. Arriving at NICTA in July 2004 as Program Leader of Sensor Networks he went on to become Research Group Manager of Embedded Systems. In Feb 2008, Skafidas and his team made an important breakthrough in next-generation wireless technology, being the first to announce the development of an integrated transceiver 60G transceiver delivering 5Gbps using the CMOS process. Professor Skafidas' research interests include: optical communications systems, systems on a chip, high speed mixed signal and radio frequency microelectronics, wireless power transfer and neural interface circuits.

10:00 - 10:30

Morning break

10:30 - 11:10

Invited talk: Prof. Dr. Koichi Asatani

Trends and Issues of Standardization of Next Generation Networks and Future Networks

Abstract: Telecommunications Infrastructure has been drastically changed since mid 1990s due to the rapid penetration of broadband Internet accesses. Such broadband capabilities of IP networks enable the Internet provide applications quite similar those supported on telecom networks, such as IP telephone. Telecom network elements have been replaced by IP-based equipment even for telephone services. Eventually, development and installment of Next Generation Networks started as the replacement of traditional circuit switched telephone networks. One of the most vital features of telephone networks is global connectivity, and therefore they are based on the global standards. As such, NGN should be also based on the global standards. This talk focuses the historical survey and future issues of the global standards conducted by ITU. It also introduces activities of the newly established Focus Group on Future Networks in ITU-T and its future perspectives.

Biography: Koichi Asatani, received his B.E.E.E., M.E.E.E. and Ph. D degrees from Kyoto University in 1969, 1971 and 1974, respectively. From 1974 to 1997, Dr. Asatani was engaged in R&D on optical fiber communication systems, hi-definition video transmission systems, FTTH, ISDN, B-ISDN, ATM networks, IP networks and their strategic planning in NTT. Currently he is Dean, Department of Computer Science and Communications Engineering, Kogakuin University, and a visiting professor, Graduate School of Global Information and Telecommunication, Waseda University, both in Tokyo, Japan. He is a Fellow of IEEE and a Fellow of IEICE. He was appointed as a distinguished lecturer of IEEE Com Soc for 2007-2009. He is a founder of Communications QoS, Reliability and Performance Modeling series symposium at ICCs and Globecom. He served as co-chair for this symposium series at ICCs and Globecom for 2002-2004. He is Ex-Chair and Advisory Board Ex-Chair Emeritus of IEEE Technical Committee on Communication Quality and Reliability (CQR-TC), Feature Editor on Standards (1993-1999), Senior Technical Editor/Technical Editor (1999-) of IEEE Communications Magazine, and Technical Editor on Broadband Technology of IEEE Communications Survey. From 1988 through 2000, he served as Vice-Chairman of ITU-T SG 13 (formerly CCITT SG XVIII), responsible for digital networks including GII, IP networks and NGN. He is serving as Chair for National Committee on Next Generation Networks in Japan, and also as Chair, R&D and Standardizations Working Group, Next Generation IP Network Promotion Forum. He has published more than fifty papers, and gave more than seventy talks including keynotes invited talks and tutorials at international conferences such as ICCs and Globecom. He is author or co-author of nineteen books including "Quality and Performance Designs of Telecommunication Networks"(IEICE, 1993, in Japanese), "Introductions to ATM Networks and B-ISDN" (John Wiley and Sons, 1997), "Multimedia Communications Networks - Technologies and Services" (Artech House, 1998), "Multimedia Communications" (Academic Press, 2001), "Information and Communication Technology and Standards" (Denki Tsushin Shinko Kyokai, in Japanese, 2006), "Introduction to Information Networks-Fundamentals of Telecom & Internet Convergence, QoS, VoIP and NGN-" (Corona-sha Publishing Inc., in Japanese, 2007), and Handbook of Enterprise Integration (CRC Press, 2009). His current interests are Information Networks and Network Architectures including Broadband networking, Internetworking, IP telephony, NGN, Future Networks and their QoS aspects.

10:30 - 12:10

Cross-layer Design

Throughput Enhancement by Cross-Layer Header Compression in WLANs

Hussain S Kazmi (National University of Sciences and Technology, Pakistan); Haroon Raja (National University of Sciences and Technology, Islamabad, Pakistan)
pp. 329-333

Analytical Performance Evaluation of Ieee 802.15.4 with Multiple Transmission Queues for Providing Qos Under Non-Saturated Conditions

Youn-Soon Shin (Dongguk University, Korea); Kang-Woo Lee (Dongguk University, Korea); Jong-Suk Ahn (University of Dongguk, Korea)
pp. 334-339

A Crosslayer Design Approach for Multihop Diversity Schemes with Feedback Capabilities

Asaduzzaman Asad (University of Ulsan, Korea); Hyung-Yun Kong (University of Ulsan, Korea); Ha Vu (University of Ulsan, Korea)
pp. 340-345

Optimal Threshold for Throughput and Optimal Threshold for Capacity in One-Bit Feedback Scheduler

Fumio Ishizaki (Nanzan University, Japan); Kaoru Momiyama (Nanzan University, Japan)
pp. 346-351

Performance Evaluation of the Vehicular Ad-Hoc Network Using the Modified Binary Countdown Scheme

Koichiro Hashiura (Ibaraki University, Japan); Hiromasa Habuchi (Ibaraki University, Japan)
pp. 352-356

Relay & Cooperative Communications

Delay Diversity for Direct Sequence Spread Spectrum System to Reduce Transmitting Power in Rayleigh Flat-Fading Channel

Stevan Mirko Berber (University of Auckland, New Zealand); Yu-Lin Tsou (The University of Auckland, New Zealand); Shudong Fang (The University of Auckland, New Zealand)
pp. 357-362

Performance Evaluation of Macro Diversity Handover Technique for Multi-Hop Relay Cellular Networks

Jamil Sultan (Universiti Kebangsaan Malaysia, Malaysia); Norbahiah Misran (UKM, Malaysia); Mahamod Ismail (Universiti Kebangsaan Malaysia, Malaysia); Mohammad Tariqul Islam (, Malaysia); Hafizal Mohamad (Mimos Bhd, Malaysia)
pp. 363-367

Relaying MIMO for Cooperative Mobile Networks

Nafis Zaman (University Of Greenwich, United Kingdom); Triantafyllos Kanakis (University of Greenwich, United Kingdom); Predrag Rapajic (University of Greenwich, United Kingdom)
pp. 368-372

Outage Probability of Cognitive Amplify-and-Forward Relay Networks Under Interference Constraints

Hyungjong Kim (University of Yonsei, Korea); Hano Wang (Yonsei University, Korea); Jemin Lee (Massachusetts Institute of Technology, USA); Sungsoo Park (Yonsei University, Korea); Daesik Hong (Yonsei University, Korea)
pp. 373-376

11:10 - 12:10

Enhanced Network Technologies

New High-Definition Videoconference System for Remote Lectures Connecting 18 National Universities in Japan

Takeshi Sakurada (Tokyo University of Agriculture and Technology, Japan); Yoichi Hagiwara (Tokyo University of Agriculture and Technology, Japan)
pp. 377-382

Indoor Location-Assisted Device Switching System for VoIP Application

Nur haliza Abdul Wahab (Universiti Teknologi Malaysia, Malaysia); Sharifah Hafizah Syed Ariffin (Universiti Teknologi Malaysia, Malaysia); Liza A. Latiff (University Technology Malaysia, Malaysia); Norsheila Fisal (Universiti Teknologi Malaysia, Malaysia); Khong Neng Choong (MIMOS Berhad, Malaysia); Rajina M A Raj Mohamed (MIMOS Berhad, Malaysia); Mazlan Abbas (MIMOS Berhad, Malaysia)
pp. 383-388

An Aggressive ONU Sleep Control Scheme That Squeezes Sleep Time Into Time to Transmit Data

Manabu Yoshino (NTT Access Network Service Systems Laboratories, Japan); Noriyuki Oota (NTT Corporation, Japan); Jun-ichi Kani (NTT, Japan); Hirotaka Nakamura (NTT Access Network Service Systems Laboratories, Japan); Naoto Yoshimoto (NTT Access Network Service Systems Laboratories, Japan); Hisaya Hadama (NTT, Japan)
pp. 389-394

12:10 - 13:30

Lunch break

13:30 - 15:10

Cognitive Radio and Networks

The Capacity of Cognitive Ad Hoc Networks

Seungmo Kim (Samsung Electro-Mechanics Co., Ltd., Korea)
pp. 395-400

Primary System Interference Analysis for Cognitive Radio Transmission Power Control

Meng-Jung Ho (The University of Auckland, New Zealand); Stevan Mirko Berber (University of Auckland, New Zealand); Kevin W Sowerby (The University of Auckland, New Zealand)
pp. 401-405

Experimental Evaluation of Multiple Signal Identification Based on Cyclostationarity in Spectrum Sharing Scenarios

Hiroki Harada (Ntt Docomo, Inc., Japan); Hiromasa Fujii (NTT DoCoMo, Inc., Japan); Shunji Miura (NTT DOCOMO, Inc., Japan); Tomoyuki Ohya (NTT DoCoMo, Japan)
pp. 406-411

Novel Autocorrelation Based Spectrum Sensing Methods for Cognitive Radios

Jun Wang (Southeast University, P.R. China); Guangguo Bi (Southeast University, P.R. China)
pp. 412-417

Some Applications of Coding

Analysis of Hybrid ARQ in 3GPP LTE Systems

Kumbesan Sandrasegaran (University of Technology, Sydney, Australia); Scott N Reeves (University of Technology, Sydney, Australia); Huda Adibah Mohd Ramli (University of Technology, Sydney, Australia); Riyaj Basukala (University of Technology, Sydney, Australia)
pp. 418-423

Performance Analysis of Overlap FFT Filter-Bank for Dynamic Spectrum Access Applications

Masahiro Umehira (Ibaraki University, Japan); Motohiro Tanabe (KDDI Corporation, Japan)
pp. 424-428

Pragmatic Trellis Coded Modulation for Adaptive Multi-Objective Genetic Algorithm-Based Cognitive Radio Systems

Ayman A. El-Saleh (University Multimedia (MMU), Malaysia); Mahamod Ismail (Universiti Kebangsaan Malaysia, Malaysia); Mohd Alauddin Mohd Ali (Universiti Kebangsaan Malaysia, Malaysia)
pp. 429-434

Amplitude-Locked Loop Separation and Encryption System Analysis Combined Cognitive Radio

Peng-Liang Peng (National Kaohsiung University of Applied Sciences, Taiwan)
pp. 435-440

Ad Hoc & Sensor Network - Optimization and Security

Adaptive Beacon Rate Adjusting Mechanism for Safety Communication in Cooperative IEEE 802.11p-3G Vehicle-Infrastructure Systems

Yufei Feng (Beijing University of Posts and Telecommunications, P.R. China); Yingtian Du (Beijing University of Posts and Telecommunications, P.R. China); Zhanyang Ren (Beijing University of Posts and Telecommunications, P.R. China); Zi Wang (Beijing University of Posts and Telecommunications, P.R. China); Yu Liu (Beijing University of Posts and Telecommunications, P.R. China); Lin Zhang (Beijing University of Posts and Telecommunications, P.R. China)
pp. 441-446

Adaptive Sampling for Node Discovery: Wildlife Monitoring & Sensor Network

Sivaramakrishnan Sivakumar (Auckland University of Technology, New Zealand); Adnan Al-Anbuky (AUT University, New Zealand); Barbara Breen (AUT University, New Zealand)
pp. 447-452

Opportunistic Node Authentication in Intermittently Connected Mobile Ad Hoc Networks

Yaozhou Ma (The University of Sydney, Australia); Abbas Jamalipour (University of Sydney, Australia)
pp. 453-457

Fuzzy Controller for a Dynamic Window in Elliptic Curve Cryptography Wireless Networks for Scalar Multiplication

Xu Huang (University of Canberra, Australia); Dharmendra Sharma (University of Canberra, Australia)
pp. 458-463

DiamEAP: An Open-Source Diameter EAP Application and Its Evaluation

Souheil Ben Ayed (Keio University, Japan); Fumio Teraoka (Keio University, Japan)
pp. 464-469

Tutorial - WiMAX: Current Standard, Evolution Toward IMT-Advanced and Beyond 802.16m - Dr Hafizal Mohamad

WiMAX has attracted much interest in commercial deployment due to its inherent features delivering a high data-rate with good QoS support. Current WiMAX technology is mainly based on 802.16e-2005 standard, which support mobility to enable connections on the move. It has evolved from fixed (802.16-2004) standard, which was the first wireless metropolitan network (WMAN) standard to be based on OFDM. Initial works for IMT-Advanced started in December 2006 with the formation of 802.16m task group (TGM). The objective of this tutorial is to highlight current achievement of WiMAX as well as to equip participants with technical details related to current and future 802.16 standards, including system and network beyond 802.16m. This tutorial commences with introductory background on wireless broadband market and overview of future trends. These can be related to current industry effort towards IMT-Advanced. Subsequently an explanation on WiMAX/802.16 standards including commercial deployment, certification, 802.16 standard family and protocol stack overview will be provided. Key enabling techniques (mandatory and optional features) of WiMAX, such as OFDMA, AMC, MIMO, HARQ, STC, QoS and multihop relay, will be discussed in this tutorial. Features of system and network within and beyond 802.16m are also explained.

Tutorial Outline:

1. Introduction
 - o Wireless Broadband Market
 - o Spectrum and Regulation
 - o Future Trends
2. IMT-2000 and IMT-Advanced
 - o History of IMT-2000
 - o Requirements for IMT-Advanced
3. WiMAX and 802.16 Standards
 - o WiMAX Commercial Deployment
 - o WiMAX Forum and Certification
 - o WiMAX Network Reference Model
 - o IEEE 802.16 Standards: Past and Present (1999 – 2010)
 - o IEEE 802.16-2004 and 802.16e-2005: Specification and Protocol Stack
 - o IEEE 802.16-2009: Revision of IEEE Std 802.16
 - o IEEE P802.16m: Performance Requirements, Timeline and Technology Features
 - o Beyond 802.16m: Recent Development and Status
4. Key Enabling Technologies
 - o Orthogonal Frequency-Division Multiple Access (OFDMA)
 - o Adaptive Modulation Coding (AMC)
 - o Multiple Input Multiple Output (MIMO) and Smart Antenna
 - o Hybrid Automatic Repeat ReQuest (HARQ)
 - o Space Time Coding (STC)
 - o Quality of Service (QoS)
 - o Multihop Relay
5. Competing Technology and Standard
6. Summary

Biography: Hafizal Mohamad received the B.Eng. (First Class Honors) and Ph.D. from University of Southampton, UK in 1998 and 2003, respectively. He has been a faculty member at the Multimedia University, Malaysia from 1998 until 2008. In Feb – Mar 2005, he was a visiting researcher at National Institute of Information and Communications Technology (NICT), Yokosuka, Japan. His current research interests include wireless broadband access (PHY/MAC) and ad-hoc network. In these areas, he has published over 20 journal and conference papers. Since 2007, he has been involved in R&D project related to 802.16/WiMAX as a senior staff researcher in the applied research division of Wireless Communication Cluster at MIMOS Berhad, a Malaysian government funded research institute, where he has 5 patents pending at WIPO and 12 patents pending at MyIPO. He is also an adjunct lecturer at Universiti Putra Malaysia since 2009. He is a member of IEEE and an elected Chair of the IEEE Malaysia Section Communications and Vehicular Technology Society Joint Chapter 2008-2010. He was a Tutorial Chair of the 2005 IEEE

15:10 - 15:30

Afternoon tea

15:30 - 17:30

Handover in Wireless Networks

Potential Throughput Based Access Point Selection

Suhua Tang (ATR Adaptive Communications Research Laboratories, Japan); Noriyuki Taniguchi (ATR Adaptive Communications Research Labs., Japan); Oyunchimeg Shagdar (ATR Adaptive Communications Research Laboratories, Japan); Morihiko Tamai (ATR Adaptive Communications Research Laboratories, Japan); Hiroyuki Yomo (Kansai University, Japan); Akio Hasegawa (ATR Adaptive Communications Research Lab., Japan); Tetsuro Ueda (ATR Adaptive Communications Research Laboratories, Japan); Ryu Miura (ATR Adaptive Communications Research Laboratories, Japan); Sadao Obana (Advanced Telecommunication Research Institute International, Japan)

pp. 470-475

Impact of Reading System Information in Inbound Handover to LTE Femtocell

Hyungdeug Bae (Electronics and Telecommunications Research Institutes, Korea); Nam-Hoon Park (ETRI, Korea)

pp. 476-480

Impact of Soft Handover and Pilot Pollution on Video Telephony in a Commercial Network

Lu Chen (University of Technology, Sydney, Australia); Kumbesan Sandrasegaran (University of Technology, Sydney, Australia); Riyaj Basukala (University of Technology, Sydney, Australia); Faisal Madani (University of Technology Sydney, Australia); Cheng-Chung Lin (University of Technology Sydney, Australia)

pp. 481-486

Mobility-Based Handover Decision Mechanism to Relieve Ping-Pong Effect in Cellular Networks

Jaheon Gu (Sungkyunkwan University, Korea); Sueng Jae Bae (Sungkyunkwan University, Korea); Min Young Chung (Sungkyunkwan University, Korea); Kyung-yul Cheon (ETRI(Electronics and Telecommunications Research Institute), Korea); Aesoon Park (ETRI, Korea)

pp. 487-491

Effects of Time-to-Trigger Parameter on Handover Performance in SON-Based LTE Systems

YeJee Lee (Sogang University, Korea); Bongjhin Shin (Sogang University, Korea); Jaechan Lim (Sogang University, Korea); Daehyoung Hong (Sogang University, Korea)

pp. 492-496

Ad Hoc & Sensor Network - Data Management

Performance Evaluation and Channel Modeling of IEEE 802.15.4c in Urban Scenarios

Bingfeng Xia (Tsinghua University, P.R. China); Qiao Fu (Workmate, P.R. China); Dong Li (Workmate, P.R. China); Lin Zhang (Tsinghua University, P.R. China)

pp. 497-502

Fair Data Flows Scheduling Schema for Multihop Wireless Ad Hoc Networks

Hamidreza Salarian (University of Wollongong, Wollongong, Australia); Pejman Khadivi (Isfahan University of Technology, Iran)

pp. 503-508

Parallel High-Performance Applications with MPI2Java - A Capable Java Interface for MPI 2.0 Libraries

Matthias Vodel (Chemnitz University of Technology, Germany); Wolfram Hardt (Chemnitz University of Technology, Germany)
pp. 509-513

Multicopy Backup in Wireless Sensor Networks

Taehee Kim (Posco ict, Korea); Hee Jeong (Hanyang University, Korea); Kim Jung-Hun (Posco ict, Korea); Myeong-kyun Lee (POSCON R&D Center, Korea)
pp. 514-519

MIMO Relaying for Multi-User Transmission Using a Two Stage Transmit and Relay Pre-Processing Technique

Abolfazl Falahati (Iran University of Science and Technology, Iran); Zeinolabedin Samadi (Iran University of Science and Technology, Iran)
pp. 520-525

Smarter Searching for a Network Packet Database

William Kenworthy (Murdoch University, Australia)
pp. 526-530

Tutorial - WiMAX Continued