IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS

IC 2013

Bridging the Broadband Divide
9-13 June • Budapest, Hungary

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Selected Areas in Communications Symposium

Symposium Co-Chairs

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The 2013 IEEE International Conference on Communications (ICC) will be held in the vibrant city of Budapest, Hungary from 9 – 13 June 2013. This flagship conference of IEEE Communications Society aims at addressing an essential theme on "Bridging the Broadband Divide." The conference will feature a comprehensive technical program including several Symposia and a number of Tutorials and Workshops. IEEE ICC 2013 will also include an attractive expo program including keynote speakers, various Business, Technology and Industry forum, and vendor exhibits. We invite you to submit your original technical papers, industry forum, workshop, and tutorial proposals to this event. Accepted and presented papers will be published in the IEEE ICC 2013 Conference Proceedings and in IEEE Xplore®. Full details of submission procedures are available at http://www.ieee-icc.org/2013.

Scope and Topics of Interest

The IEEE ICC 2013 **Selected Areas in Communications (SAC) Symposium** focuses on new and emerging communication technologies, including areas that are not directly addressed in any individual symposia. To ensure complete coverage of the advances, the SAC Symposium presents original contributions in the following topical areas: **(a) E-Health, (b) Power Line Communications, (c) Smart Grids, (d) Tactical Communications and Operations, (e) Satellite and Space Communication, (f) Data Storage, (g) Access Systems and Networks, (h) Green Communication Systems and Networks.**

a) **E-Health** defined as a cost-effective and secure use of information and communications technologies in support of health and the related fields, including health-care related services, surveillance, literature, education, knowledge, and research, both at the local site and at a distance. The adoption of E-Health technologies in medical fields creates huge opportunities yet poses considerable challenges that still need to be solved in order to build reliable, secure, and efficient networks or platforms with great flexibility.

b) **Power Line Communication** finds applications ranging from in-home, to access, in-vehicle and other networks including recent efforts in the smart-grid arena. Typical problems studied are the coupling into an electrical network, channel characterization, communication algorithms, interference and electromagnetic compatibility, networking, home automation, metering, and standards. Addressing these topics is very challenging and requires the cooperation between specialists from different fields.

c) The concept of a **"smarter" electricity grid** including generation, transmission, and distribution of electrical energy requires an underlying smart communications infrastructure that enables reliable two-way communication between grid elements such as meters, sensors, actuators, control centers, etc. It is anticipated that such an infrastructure will include different communications media, proven communications solutions already applied in, for example, sensor and personal communications networks, as well as new solutions that specifically address the needs of communications for Smart Grids with regards to coverage and connectivity, reliability, agility, resilience, security, and many more.

d) **Modern tactical combat operations** are characterized by a large number of communicating operational entities (either humans or machines), heightened mobility, and existence of complex, often incomplete and unpredictable combat situations. As a result, there is a need for effective methods of tactical communications, combat situation awareness, and prediction, reasoning and control of tactical combat operations.

e) Due to their inherent features, satellites present a key technology to realize the dream of global ubiquitous communications systems where applications and services can adapt to different needs and geographic environments. An active area of research in both academia and industry, this topic stream will highlight recent advances in **satellite communications.**

f) **Data storage**, communication and computing have always been the three pillars supporting today's cyber infrastructures. The exponential growth of video applications and the recent surge in cloud computing have further opened up tremendous challenges as well as opportunities for data storage. Recent emergence of new data storage technologies, such as non-volatile memories (NVM) and heat-assisted magnetic recording (HAMR), demand innovative signal processing and coding solutions. On the system level, massive distributed storage networks, data centers and cloud storage systems are currently adopting advanced error correction coding techniques, security, and advanced resource management strategies for higher storage efficiency.

g) The fiber revolution in **access networks** is finally getting started, in many cases through FTTx due to the inherent cost structure of fiber deployments. Technology aimed at reducing the cost, improving the deployability, operations and accelerating the roll-out of next-generation access networks is very important and research in this area could have impact in a much shorter term than usual.

h) **Green communication systems**, signal processing and networks are concerned with economic and ecological solutions. By promoting innovation in this critical area, substantial advances can be achieved in terms of new architectures, protocols, systems and algorithms to allow a significant reduction in energy consumption.

Topics of Interest (not limited to)

E-Health Area (chair: P. Ray)
- Biomedical and biosensor engineering
- Body sensor networks and wearable sensor systems
- Clinical biofeedback, decision support systems, and tools
- E-Health information and network Infrastructure
- E-Health virtual and augmented reality
- Emerging E-Health applications
- Health grid and health cloud
- Health monitoring, traffic characterization, & management
- ICT-enabled personal health system
- Image and video processing on E-Health
- Pervasive and ubiquitous computing on E-Health
- Security and privacy on E-Health
- Storage and Display Devices for E-Health
- Telemedicine and mobile telemedicine
- Wireless medical device systems and effectiveness

Power Line Communications Area (chairs: A. M. Tonello, S. Weiss)
- Electro-magnetic compatibility, interference, coupling
- Coexistence and interoperability
- Channel modeling
- Signal processing, modulation, coding and error control techniques
- Multiple access techniques and MAC protocols
- Cognitive and cooperative algorithms and approaches
- Duplex and repeater techniques, routing, and autonomous network functions
- Network planning, optimization and service management
- Cross-layer optimization and service integration
- Security in PLC
- Modem and LSI design
- Access, in-home, in-vehicle PLC networks
- PLC for the Smart grid
- Green PLC
- System architectures and solutions, broadband and multimedia applications
- Experimental systems, field trials, and commercial networks
- PLC Standardization and regulation

Smart Grid Area (chair: B. Honary)
- Physical layer technologies and techniques for Smart Grid communications
- MAC layer and routing protocols for Smart Grid
- Architectures and networking for Smart Grid Networks
- Resource allocation, coexistence, interference in Smart Grid networks
- Cross-layer optimization for Smart Grid communications
- Communications requirements and Quality-of-Service for Smart Grid applications
- Modeling, performance analysis, field trials for Smart Grid communication networks
- "Green" solutions for Smart Grid communications
- Security for Smart Grid communication networks

Tactical Communications and Operations Area (chair: G. Jakobson)
- Next generation of tactical networks
- Architectures and Interoperability
- Information assurance and security in tactical networks and systems
- Cyber warfare, impact on tactical communications and operations
- Tactical network operations and management
- Net-Centric warfare
- Cooperative tactical communications
- Tactical combat situation awareness
- Situation modeling, recognition and verification
- Situation awareness in incomplete, inexact and probabilistic environments
- Tactical mission vulnerabilities, threat analysis and predictive operational picture modeling
- Cognitive modeling tactical situations and hard/soft information fusion
- Situation knowledge acquisition, learning and situation discovery
- Tactical cognitive networks
- Case studies, platforms, tools, deployments

Satellite and Space Communications Area (chair: H. Wakana)
- Air interface over satellite networks
- Mobile satellite communications for land vehicle, vessels and aircraft
- Internetworking, architecture, protocols and applications in satellite networks
- Control and algorithms for satellite networks
- Free-space optical satellite communications
- Propagation and mitigation techniques
- Navigation satellite systems and applications
- New paradigms in satellite and space communications

Data Storage Area (chair: T. Jing Li)
Technologies for hard disk drives and optical drives
- Error-correcting codes (LDPC codes, trellis coding and turbo codes, etc) and energy efficient
- Decoders, coding bounds, density, and channel capacity
- Detection methods, including sequence detection, partial response and decision feedback
- Modulation, run-length limited codes, equalization and filtering, including nonlinear techniques
- Write pre-compensation and write equalization
- Circuit designs for read/write channel electronics and coding / detection algorithms
- Timing and gain recovery
- Billing and management aspects
Data storage systems
- Data compression for digital storage, including audio and video
- Fault tolerance and coding techniques for disk arrays and data centers
- Signal processing and coding methods for object based storage systems
- Data security for storage systems
- Measurement, testing, performance optimization, and cost-performance trade-off
Emerging recording technologies
- Signal processing and coding for emerging memory technologies, such as NAND, PRAM
- MRAM, STT-MRAM, RRAM and memristor based memories
- Channel characterization, including modeling of noise and nonlinearity, for new recording medias
- NAND flash, phase change memory

Access Systems and Networks Area (chair: M. Peeters)

- Twisted pair copper systems and xDSL
- Hybrid Fiber Coaxial (HFC) systems
- FTTx and Passive/Active Optical Networks (PONs and AONs)
- Progress in Cable TV systems
- Bluetooth, Wi-Fi, WiMAX, WLL and Cellular Access
- Integrated wired/wireless access
- Optical-Wireless integration
- Free-Space Optical-Access (components, systems, and networks)
- Digital satellite access technology
- Municipal and community networks
- Home/Building/Neighborhood Area Networks
- Access network architectures and protocols
- Service convergence
- Quality of service provisioning
- Access network survivability and security
- Body area, elder/health care and biomedical access networks
- Networked appliances
- Applications (video streaming/IPTV etc.)
- Billing and management aspects

Green Communication Systems and Networks (chair: A. Manikas)

- Power consumption trends and reduction for communications (wireless, wireless multi-antenna systems and wireline)
- Energy efficient optimizations for communications, signal processing algorithms and computing
- Hierarchical distributed communication techniques
- Context-based power management & energy awareness
- Power-aware algorithms and protocols
- Signal processing, network coding and interference cancellation for lowering the overall footprint of ICT
- Energy maximization in core, network, access, and local area networks
- Energy efficient optical communications, signal processing and networking
- Electromagnetic pollution mitigation
- Green cognitive radio
- Green communication designs for smart grids
- Security strategies for green communication networks
- Energy-efficiency in wireless sensor, ad-hoc and vehicular networks
- Energy harvesting, storage and recycling
- Standardization, policy and regulation for green communications and computing
- Experimental test-beds and results for green communications and computing
- Surveys in some topics of green communications and computing

Submission Guidelines

Prospective authors are invited to submit original technical papers by the deadline 16 September 2012 for publication in the IEEE ICC 2013 Conference Proceedings and for oral or poster presentation(s). All submissions should be written in English with a maximum paper length of Five (5) printed pages (10- point font) including figures without incurring additional page charges (maximum 1 additional page with over length page charge if accepted).**Standard IEEE Transactions templates for Microsoft Word or LaTeX formats found at** http://www.ieee.org/portal/pages/pubs/transactions/stylesheets.html

Alternatively you can follow the sample instructions in template.pdf at http://www.comsoc.org/confs/globecom/2008/downloads/template.pdf

Only PDF files will be accepted for the review process and all submissions must be done through EDAS at http://edas.info/

Co-Chairs Biographies

Andrea M. Tonello received the Dr.Eng. degree in electronics and the Dr. of Research degree in electronics and telecommunications from the University of Padova, Padova, Italy. From 1997 to 2002, he was with Bell Labs—Lucent Technologies, first as a member of the technical staff, then he was promoted to Technical Manager, and then to Managing Director of Bell Labs Italy. In 2003, he joined the University of Udine, Italy, where he is an Aggregate Professor and leads the WiPLi lab. Dr. Tonello received several awards, including the Distinguished Visiting Fellowship from the Royal Academy of Engineering, U.K., in 2010, Lecturer Award 2011–2012. He was the General Chair of IEEE ISPLC 2011. He is the Vice-Chair of the IEEE Communications Society Technical Committee on Power Line Communications. He serves as an Associate Editor for the IEEE Transactions on Vehicular Technology and and the IEEE VTS Distinguished for the IEEE Transactions on Communications. He is also the founder of WiTiKee a spin-off company of the university lab.

Bahram Honary   received his MSc in Digital Communications and PhD in Error Protection Techniques for Bursty Channels from the University of Kent at Canterbury (UK) in 1976 and 1982 respectively.In 1984, after one year's postdoctoral studies at the University of York, he was appointed a Senior Lectureship at Coventry Polytechnic. In 1988, he joined the Department of Engineering, University of Warwick. In 1992, he took up the position of Chair of Communications Engineering at Lancaster University, where he established the Department of Communication Systems. At present he is leading the research group of over 20 students and staff. His current research interests include: channel coding application to radio communication channels; secure communication applications, power line communication systems, modem design and synchronization. Prof. Honary is the chairman of the IEEE Chapter for Information Theory for the UK and Republic Ireland. He is a Fellow of the Institution of Engineering and Technology (IET) and Fellow of the Institute of Mathematics and Applications (IMA). He has recently been appointed as a QinetiQ Visiting Fellow. He has co-authored a book on "Trellis Decoding of Block Codes: A Practical Approach", (co-edited) 11 books on the related areas, published in excess of 500 research papers, organized international conferences and been invited to present many key note speeches at national/international conferences. Since 1988 50 Phd students graduated under his supervision.

Gabriel Jakobson is VP and Chief Scientist of Altusys Corp., a consulting firm specializing in situation management technologies for defense and cyber security applications. He received the PhD degree in Computer Science from the Institute of Cybernetics, Estonia. Dr. Jakobson holds Honorary Degree of Doctor Honoris Causa from the Tallinn University of Technology, Estonia, and is Distinguished IEEE Communications Society Lecturer. Dr. Jakobson is General Chair of the Conference on Cognitive Methods in Situation Awareness and Decision Support (CogSIMA 2011-2013, TPC co-chair of the NATO Conference on Cyber Conflict (2011-2013), and co-chair of the Symposium on Selected Areas of Communication at ICC 2009-2013. Dr. Jakobson is vice-chair of the Tactical Communications and Operations Technical Committee of IEEE ComSoc, chair of the IEEE ComSoc Sub-Committee on Situation Management, and member of IEEE Technical Committee on Security and Privacy in Complex Information Systems.

Tiffany Jing Li received the B.S. degree in Computer Science from the Peking University, Beijing, China, the MS and Ph.D. degrees in Electrical Engineering from the Texas A&M University, USA, in 1997, 1999, and 2002, respectively. Since then she has been with the Electrical and Computer Engineering Department at Lehigh University, where she is now an Associate Professor. Dr. Li is currently an editor for IEEE Transaction on Wireless Communications. She also served as a Symposium Co-Chair of ICC'2008, GLOBECOM'2005, Chinacom'2006, Wirelesscom'2005. She received many awards for academic performance including the Ethel Ashworth-Tsutsui Memorial Award for Research in 2001 for "demonstrating excellence in research at Texas A&M University", the Chinese Academy of Science Striving Scholarship 1994-1997, and a finalist and third place prize in the '93 Chinese Mathematics Olympiad (CMO, the Winter Camp). She has widely published in the areas of coding theory and practice, wireless communication and networks, and storage systems.

Athanassios Manikas received his PhD and DIC from Imperial College, University of London. He holds the Chair of the Communications and Array Processing in the Department of Electrical & Electronic Engineering, Imperial College London and he is the Technical lead of the University Defence Technology Centre in Signal Processing which is supported by EPSRC and Ministry of Defence (UK) and incorporates 12 Major UK Universities. He has published an extensive set of journal and conference papers in the area of digital communications and array signal processing and is the Author of a book (monograph) entitled "Differential Geometry in Array Processing". Currently, he is on the editorial board of IET Proceedings Signal Processing and the editor of the ICP research book-series on Communications and Signal Processing. In addition, he has held a number of research consultancies for the EU, industry and government organizations. He also held technical chair positions at various international conferences and was a TPC member of major IEEE conferences. Prof. Manikas has served as an Expert Witness in the High Court of Justice (UK) and was a member of the Royal Society's International Fellowship Committee. In addition, he is a Fellow of IET and a Chartered Engineer. He is leading a strong group of researchers at Imperial College and has successfully supervised 35 PhDs and more than 100 Masters project-students.

Michael Peeters is CTO for the Wireline Division at Alcatel-Lucent. Previously, Michael led the Access Node Technology and Copper research group in Bell Labs. Before that, he held positions in Research & Innovation and academia and has over 15 years of industry experience with research interests in semiconductor laser technology, photonics and copper physical layer technologies. As Wireline CTO, he leads the organization that is responsible for determining the mid- to long term technology and the standardization strategy for the division. He is senior member of the IEEE, has been an author or co-author on more than 30 SCI-rated publications and over 70 publications at international peer-reviewed conferences. He acts as a reviewer for IEEE and OSA journals and committee member for several conferences. He also holds several patents in the field of fixed access technology.

Pradeep Ray received his B.Tech, MTech and PhD respectively from BHU-IT and IIT-Kanpur India and UTS, Australia. He is the Director of the Asia Pacific ubiquitous Healthcare Research Centre (APuHC) at the University of New South Wales (UNSW). As part of the research programs of APuHC, he has been leading a number of collaborative research projects on E-Health with global organizations (e.g., WHO, ITU and IEEE), industry and academia in Europe, North America and Asia. His work on the WHO project (involving four countries in Asia-Pacific) on the assessment of E-Health for Health care Delivery (eHCD) led to the recent decision on the WHO Collaborating Centre on E-Health at UNSW. Pradeep is now the Chair of E-Health Technical Committee at IEEE Communication Society. He is currently leading the global consortium (involving twelve countries) on the assessment of E-Health.

Hiromitsu Wakana received his B.Sc., M.Sc. and PhD from Waseda University, Japan. He is the Distinguished Researcher of the National Institute of Information and Communication Technology (NICT), after he was the Executive Director of Knowledge Creating Communication Research Center and Yokosuka Radio Communication Research Center of NICT. He was a Visiting Professor at Yokohama National University from 2002 to 2005 and the University of Electro-Communications from 1996 to 2003 in Japan. He was a TPC member of the Satellite & Space Communications area track in Selected Areas in Communications Symposium for Globecom 2010, 2011, ICC 2011 and a Symposium co-chair of SSC for ICC2012. He is a Vice-Chair of IEEE ComSoc's Satellite and Space Communications Technical Committee.

Stephan Weiss received the Dipl.-Ing. degree from the University of Erlangen-Nürnberg, Erlangen, Germany and a PhD from the University of Strathclyde, Glasgow, Scotland. He is currently a Reader in the Department of EEE at Strathclyde. From 1999 until 2006, he held lecturer and senior lecturer positions within the School of Electronics and Computer Science at the University of Southampton, UK. Prior to this, he was a Visiting Lecturer at the University of Strathclyde and a Visiting Scholar at the University of Southern California. Stephan was technical co-chair and co-organiser of the European Signal Processing Conference (EUSIPCO) 2009 in Glasgow. His research interests are in multichannel, multirate, and adaptive systems, on which he has authored and co-authored over 200 publications.