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NEWSLETTER

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Fourth International Workshop on Reliable Networks Design and Modeling (RNDM 2012)

By Jacek Rak, Poland; Mario Pickavet, Belgium; Hideaki Yoshino, Japan

RNDM 2012 — the 4th edition of the International Workshop on Reliable Networks Design and Modeling — was held on October 3-5, 2012 in St. Petersburg, Russia. The consecutive meetings in the series of RNDM workshops were held in St. Petersburg (2009), Moscow (2010), and Budapest (2011).

RNDM 2012 was organized by Prof. Jacek Rak from Gdansk University of Technology, Poland in co-operation with Prof. Mario Pickavet from Ghent University-iMinds, Belgium, and Prof. Hideaki Yoshino (NTT/NIT, Japan). Technical co-sponsors included IEEE Region 8 and IFIP TC6 WG 6.10.

Participants of RNDM 2012.

Similar to previous editions, RNDM 2012 was a single track event gathering attendees from both academia and industry working in the area of reliable networks design and modeling. It offered keynote talks, technical sessions, and a panel discussion.

After a very careful review process, including at least three completed reviews per each submitted paper (on average: 4.2 completed reviews per each paper), 26 papers were finally accepted, and organized into seven following technical sessions:

- Resilience of IP-based Networks,
- Optical Networks Survivability,
- Resource Sharing,

Prof. Kishor Trivedi (left) and Prof. Krzysztof Walkowiak (right) delivering their keynote talks at RNDM 2012.

Presentation of the Best Paper Award (left to right: James P.G. Sterbenz and Jacek Rak, RNDM 2012 General Chair).

- End-to-end Resilience,
- Network Reliability Evaluation,
- Resilience of Virtual and Overlay Networks,
- Emerging Areas in Reliable Networks Design.

Technical program of RNDM 2012 was enriched by two keynote talks of Prof. Kishor Trivedi from Duke University, US ("Survivability quantification for networks") and Prof. Krzysztof Walkowiak from Wroclaw University of Technology, PL ("Survivable content-oriented networks – modeling and optimization").

Another important element in RNDM 2012 program was the Panel Discussion entitled "Future Research Directions in Reliable Networks Design". During this session chaired by Prof. Mario Pickavet, eight invited panelists first presented their point of views with respect to the considered topic, with special focus e.g., on reliability issues in multilayer networks, multilevel resilience, reliability of wireless communications, uncertainties in reliable networks design, resiliency aspects of software-defined networking, research directions in software failure mitigation, or impact of cloud computing on reliable networks design. These presentations were good starting points for a fruitful discussion with the audience.

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Highlighted Activities from the IEEE NZ Communications Society Chapter 2012

By Nurul I Sarkar, Chair of IEEE Joint New Zealand North & South ComSoc Chapter

The IEEE New Zealand Communications Society (ComSoc) is a joint chapter of NZ North and South Sections. There is another ComSoc/SigPro Chapter in the NZ Central Section. IEEE NZ Wireless Workshop is one of the main activities of our society for professional development of the members of the Society and the wider community. The Wireless Workshops are organised by the wireless research community of New Zealand, and have been held annually since 1998. The venues rotate between Auckland, Wellington and Christchurch. The events are normally held in late August or early September when most of the NZ Universities observe their mid-semester break.

2012 IEEE NZ Wireless Workshop Attendees (photo by Akbar Hossain).

The University of Canterbury (Christchurch) hosted last year's event and was proceeded despite of the serious earthquake earlier in the year. This year's event was held in Auckland on Friday 31st August 2012 organised by Auckland University of Technology (AUT). This annual event brought together more than 65 engineers, researchers, industrialists and policy makers working in the field of wireless communications and network technologies. People came all the way from Southland/Invercargill (south of South Island) to far north of Auckland covering the whole country.

The day consists of a series of presentations from participants, including keynote, industry, wireless research centre, and academy presentations with ample opportunity for informal discussion and networking. As always this event covered various topics and provided a forum for experts in the wireless industry and academia to discuss innovative technologies and research currently being undertaken. The idea is to provide a forum for innovative engagement and networking between academy and industry.

Professor Abbas Jamalipour (1st keynote speaker) is addressing his keynote talk on "Smart Grid Communications".

Sudhir Singh (2nd keynote speaker) is giving his presentation on "Convex optimisation for communications systems".

The workshop had two excellent keynote speakers - Professor Abbas Jamalipour (University of Sydney) and Sudhir Singh (Industrial Research Limited). Professor Jamalipour gave an interesting presentation on "Smart Grid Communications" and its future development. He highlighted the opportunity for wireless communication researchers to contribute in this exciting field. The second keynote speaker Mr Singh focused on Wireless Systems Optimization techniques using analytical modelling and its potential applications in communications.

Among the industry participants, John Yaldwyn (founding director of 4RF Limited) gave a fantastic presentation on innovation and regulation in the RF market. He highlighted the innovative activities currently undertaken by 4RF limited including high capacity transmitter design for land mobile radio services.

Dylan Jorgensen (AVIAT NETWORKS Limited) gave an interesting talk on the recent development of high frequency terrestrial microwave communication technologies. He argued that terrestrial microwave communications can be very effective (e.g. lower delay) in linking US major cities than other technologies such as optical networks.

Rahul Mehta (Ministry of Economic Development) highlighted the recent developments of radio spectrum planning and management in New Zealand. He answered some of the key questions related to radio spectrum allocation for commercial programs such as digital TV and other communications.

NZi3 wireless research centre (WRC) is a national research centre located at the University of Canterbury (Christchurch). Three key researchers, namely Nicholas Pau, Gayathri Kongara, and Sasha Wang from NZi3 WRC highlighted their research activities. Nicholas Pau gave a short presentation on "When can interference be modelled as noise in LTE systems". Gayathri Kongara talked about "Capacity enhancing techniques for MIMO systems", and Sasha Wang highlighted forward error correction coding techniques for broadcast communication systems. The summary of the recent findings are also presented reflecting the quality of research work carried out at WRC in recent years. Some of the research projects undertaken at the NZi3 are commercial in nature sponsored by industry.

The various wireless research groups around the country, including University of Canterbury, Massey University, Victoria University of Wellington, University of Auckland, AUT University and Manakau Institute of Technology gave mini presentations highlighting their current research activities.

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Distinguished Lecturer Tours of Falko Dressler, Nsir Memon and Narayan Mandayam in India

By Prof. Deergha Rao Korrai, Chair of the Communications and Signal Processing Societies Joint Chapter, Hyderabad, India

Three Distinguished Lecturer Tours were held in India in August and September 2012 by Falko Dressler, Nsir Memon and Narayan Mandayam.

DLT of Falko Dressler

The Distinguished Lecturer tour of Dr. Falko Dressler,Professor, Institute of Computer Science, University of Innsbruck, Austria, was held in India during August 2012 with the following schedule:

- Pune, 6th & 7th August 2012(two lectures); on 'Protocol Engineering for Vehicular Communications' ' and Biologically-inspired and Nano-scale Communication and Networking'.
- Hyderabad, 8th August 2012 (One lecture); on 'Protocol Engineering for Vehicular Communications'.

The IEEE Communications Society has funded the DLT of Dr.Dressler. In the lecture on Biologically-inspired and Nano-scale Communication and Networking , Dr.Dressler has presented the existing bio-inspired networking and communication protocols and algorithms devised by looking at biology as a source of inspiration, and by mimicking the laws and dynamics governing these systems along with open research issues for the bio-inspired networking. Furthermore, he has linked the domain of bio-inspired networking to the forthcoming research domain of nano networks, which will bring a set of unique challenges

During the lecture on 'Protocol Engineering for Vehicular Communication' , Dr.Dressler has introduced the recent developments in the field of IVC protocols and the used methods. He has discussed inparticular the possible approaches to IVC based on flooding, peer-to-peer techniques, and periodic beaconing. Further, he has elaborated the investigations on the evolution of simulation techniques and how recent advances in bidirectional coupling of road traffic microsimulation and network simulation lead to more realistic results at comparably low computational cost.

DLT of Nasir Memon

The Distinguished Lecturer tour of Dr.Nasir Memon, IEEE Fellow, Professor, Polytechnic Institute of New York University, U.S.A, was held in India during August 2012. with the following schedule:

- Bangalore, 21st August 2012(one lecture); on 'Recent Advances in Image Forensics'.
- Hyderabad, 23rd &24th August 2012 (two lectures); on 'Biometric Rich Gestures: A Touching Farewell to Passwords' and 'Recent Advances in Image Forensics'.

The IEEE Signal Processing Society has funded the DLT of Dr. Memnon. The lecture at Bangalore was organized by the Signal Processing chapter of the IEEE Bangalore Section. The lecture at Bangalore on 'Biometric Rich Gestures: A Touching Farewell to Passwords' was held in the Indian Institute of Science.

Dr. Memon's lectures in Hyderabad were organized by the Communications and Signal Processing Societies Joint Chapter of the IEEE Hyderabad Section. The lecture on 'Recent Advances in Image Forensics' is tuned to a tutorial which is held on 23 August 2012 at Research and Training Unit for Navigational Electronics (NERTU) auditorium, University College of Engineering, Osmania University, Hyderabad from 2P.M to 5.30PM. The audience for the tutorial are 34(Thirty four) including students, Research scholars, and faculty from engineering colleges.

In this tutorial, Dr Memon has overviewed recent developments in the field of forensics, focusing on three problems. First, collecting image evidence and reconstructing them from fragments, with or without missing pieces. This involves sophisticated file carving technology. Second, attributing the image to a source, be it a camera, a scanner, or a graphically generated picture. The process entails associating the image with a class of sources with common characteristics (device model) or matching the image to an individual source device, for example a specific camera. Third, attesting to the integrity of image data. This involves image forgery detection to determine whether an image has undergone modification or processing after being initially captured.

Audience during the lecture of Nasir Memon at NERTU, Osmania University, Hyderabad on 23 August 2012.

The lecture on 'Biometric Rich Gestures: A Touching Farewell to Passwords' is held on 24 August 2012 at the Indian Institute of Technology, Hyderabad from 3.30PM to 5PM. The audience for this lecture are 32(thirty two) including students, Research scholars, and faculty from IIT, Hyderabad..

During the lecture, he has stated that multi-touch interfaces allow users to have a very intuitive, tactile and visual interaction with a computing device by touching a surface with their fingers with gestures that resemble interaction with real life objects. The development of multi-touch technology opens up avenues for new authentication techniques that go beyond text passwords. He has discussed gesture based authentication alternatives that are both engaging and pleasing to the users while providing strong security.

DLT of Narayan Mandayam

The Distinguished Lecturer tour of Dr. Narayan Mandayam, IEEE Fellow, Professor, Rutgers University, U.S.A, was held in India during September 2012. with the following schedule:

- Bangalore, 21stSeptember 2012(one lecture); on 'Network Coding as a Dynamical System'.
- Pune, 24th & 25th September 2012 (two lectures) on 'Towards Green Techniques for Wireless Communications' and 'Network Coding as a Dynamical System'.
- Hyderabad, 26th September 2012 (two lectures); on 'Towards Green Techniques for Wireless Communications' and 'Network Coding as a Dynamical System'.

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DISTINGUISHED LECTURERS/*continued from page 3*

The IEEE Communications Society has funded the DLT of Dr. Narayan. His lecture on 'Towards Green Techniques for Wireless Communications' at Hyderabad was held on 26 September 2012 from 10.30am to 12 noon at Imagination Technologies, Banjara Hills, Hyderabad and the talk on 'Network Coding as a Dynamical System' was held from 4.30pm to 6pm . at Research and Training Unit for Navigational Electronics (NERTU) auditorium, University College of Engineering, Osmania University, Hyderabad 80participants have attended these lectures.

During his talk on 'Towards Green Techniques for Wireless Communications', Dr.Narayan has first identified the techniques affording power savings in cellular systems and further presented new energy efficient radio resource management approaches motivated by two considerations: (1) the fundamental tradeoff between the marginal utility of power and the marginal utility of bandwidth in power and bandwidth constrained systems; and (2) the advent of dynamic spectrum access (DSA) techniques afforded by cognitive radio and noncontiguous OFDM technology

In the lecture on 'Network Coding as a Dynamical System', Dr.Narayan has outlined a framework based on differential equations that allows modeling of the dynamics of wireless network coding and enables the design of cross-layer radio resource allocation algorithms

NZ CHAPTER ACTIVITIES/*continued from page 2*

Some of the research students (Masters and PhD) in the group also presented their research findings.

Overall, it was a productive day for the workshop attendees as far as presentations, academy-industry link, and sharing ideas are concerned. People have enjoyed the facilities provided by AUT University and have had talking/networking during morning tea, lunch, and afternoon tea.

The event was co-sponsored by IEEE, 4RF Limited, Specialist Rentals Limited, and AUT University. The ComSoc Chapter Chair (joint NZ North and South) Associate Professor Nurul Sarkar received positive feedback from the attendees indicating that it was a highly successful event which was beautifully managed by Network and Security Research Group at AUT. The next year's Workshop will be hosted by Victoria University of Wellington.

In addition to hosting IEEE NZ Wireless Workshop in recent weeks, we have also organized IEEE ComSoc DL Tour to New Zealand. Professor Koichi Asatani (from Japan) has agreed to come and deliver his DL talks in Auckland, Christchurch and Wellington on November 19, 21 and 23, respectively. IEEE DLs are very high profile people in their field of specialization worldwide, and Professor Asatani's visit to New Zealand will enhance international networking opportunity for members of the society and the wider community.

RNDM 2012/*continued from page 1*

Ceremony of Best Paper Award took place during the closing session. This time the award was given to the paper "Modelling attacks and challenges to wireless networks" by Dongsheng Zhang (US), Santosh Ajith Gogi (US), Dan S. Broyles (US), Egemen K. Cetinkaya (US), and James P.G. Sterbenz (US, UK).

A special issue of Telecommunication Systems Journal (Springer) for extended versions of selected highest-quality RNDM 2012 papers is currently under preparation.

Based on feedback from participants, we are convinced that RNDM 2012 was a very successful event with valuable contents being presented. As a proof of that, all technical sessions were highly attended (each time over 80% of attendance ratio). Also, we were extremely satisfied to notice that RNDM 2012 was the next event in the series of RNDM workshops with 100% of papers being presented (i.e., without "no-shows").

The next edition of RNDM will take place in Almaty, Kazakhstan, on 10–13 September, 2013. More information may be found at http://www.rndm.pl.

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