

The 2011 2nd International Congress on Computer Applications and Computational Science (CACS 2011)

15-17 November 2011, Bali Dynasty Resort, Bali, Indonesia



CONFERENCE PROGRAM

Instructions for Presenters

1. Please check this Program for your presentation time(s) and room(s). Please go to the room five minutes before the session starts and report to the Session Chair.
2. Please do not exceed your allotted time. Please follow the instructions of the Session Chair.
3. If the Session Chair(s) is/are absent from the session, the last speaker should serve as the Session Chair.

Instructions for Session Chairs

The Organizing Committee would like to ask for your kind help to serve as Session Chair(s). If you cannot fulfil your duties as session chair, please try to make sure that someone else will take your place as session chair.

Session chairs are kindly requested to do the following:

1. Calculate the time allocated for each paper in your session. The time allocated to a paper may be different in different sessions, due to uneven distributions of papers in different areas (the number to the left of a session in the “Conference Program at a Glance” next page shows the number of papers allocated to this session) and a small number of absentees due to visa and other reasons.
2. Arrive at the room of the session five minutes before the session starts and identify each of the speakers for the session.
3. Do not allow presentations or the subsequent discussions to run beyond the starting time of the next presentation.
4. If the presenter of a paper is absent (“no-show”), please continue to the next presentation. Please check again at the end of the last presentation whether the “no-show” turns up. Best efforts have been made to reduce the number of no-shows; however, they may not be eliminated.
5. Each oral presentation room is equipped with an LCD projector. If something is not working properly, please contact conference staff.

Thank you very much for your help with this important responsibility.

Program at a Glance	
Day A: Tuesday, 15 November 2011	
8:30	Registration
9:00 - 9:20	Opening
9:20 - 10:30	Keynote: Abbas Jamalipour, "Security and Privacy Challenges in Smart Grid Networks"
10:30 - 11:00	Coffee
11:00 - 12:00	1. Computers in Biomedical Engineering and Biotechnology
12:00 - 13:00	Lunch
13:00 - 15:30	2. Scientific Computing and Applications
15:30 - 16:00	Coffee
16:00 - 18:00	3. Computer Networks and Communications
Day B: Wednesday, 16 November 2011	
9:00 - 9:30	Plenary: Nurul I Sarkar, "Improving Wireless Network Performance: Strategies and Guidelines"
9:30 - 10:30	4. Intelligent Systems
10:30 - 11:00	Coffee
11:00 - 12:00	5. Computers in Energy and Power Systems
12:00 - 13:00	Lunch
13:00 - 15:30	6. Signal, Image and Multimedia Processing
15:30 - 16:00	Coffee
16:00 - 18:00	7. Computers in Education and Simulations
18:00 - 20:00	Banquet
Day C: Thursday, 17 November 2011	
9:00 - 10:30	8. Computer Control and Robotics
10:30 - 11:00	Coffee
11:00 - 12:00	9. Computer Hardware, VLSI, and Nano Technologies
12:00 - 13:00	Lunch
13:00 - 15:30	9a. Data and Software Engineering
15:30 - 16:00	Coffee
16:00 - 18:00	9b. Computers in Industry and Manufacturing

Keynote & Plenary Speeches

Keynote Title: Security and Privacy Challenges in Smart Grid Networks

Keynote Speaker: Professor Abbas Jamalipour, University of Sydney, Australia

Summary: Integration of electrical power grid and data communication in a smart grid network introduces various advantages such its greenness, two-way communications between energy suppliers and customers, real-time pricing, load shedding and consumption management. It also creates a wide area of research for the telecommunications and distributed computing researchers. As a result, Smart Grid has very recently become a critical research field within the power, telecommunications and computer engineer communities. Despite its popular naming these days, Smart Grid seems to be defined differently among researchers and developers. Besides its environment and technical benefits, such integration will also introduce some new threats to the security of the smart grid. In this talk, the topic of Smart Grid Network will be explained in a completely new way and after that one of the main challenging issues in such a network, that is the security and privacy of grid customers will be described. Security and privacy are considered as the decision-making issues on whether nations will adopt the intelligent grid in near future or leave it open to a distant future.



Abbas Jamalipour is the Chair Professor of Ubiquitous Mobile Networking and leads the Wireless Networking Group (WiNG) at the University of Sydney, Australia. He is a Fellow of IEEE, IEICE, and Engineers Australia, a Professional Member of ACM, and an IEEE Distinguished Lecturer. He received his PhD in Electrical Engineering from Nagoya University, Japan. He is the author of six technical books, nine book chapters, and over 300 technical papers in scholarly journals and international conferences, all in the area of wireless networks. He was the Editor-in-Chief IEEE Wireless Communications and currently he is an editor for several scholarly journals. He is the elected Vice President – Conferences, IEEE Communications Society 2012-13. He is the Chair of the Communication Switching and Routing Technical Committee and the Vice Director of the Asia Pacific Board, and a Past Chair of the Satellite and Space Communications Technical Committee, all of the IEEE Communications Society. He was the General Chair IEEE WCNC2010, and has been a technical chair for several IEEE ICC, GLOBECOM, WCNC and PIMRC conferences. He is the recipient of several prestigious awards such as the 2010 IEEE ComSoc Harold Sobol Award for Exemplary Service to Meetings & Conferences, the 2006 IEEE ComSoc Distinguished Contribution to Satellite Communications Award, and the 2006 IEEE ComSoc Best Tutorial Paper Award.

Plenary Title: Improving Wireless Network Performance: Strategies and Guidelines

Plenary Speaker: Nurul I Sarkar

Summary: There has been a tremendous growth in the deployment of IEEE 802.11 (a/b/g/n) wireless local area networks (WLANs) in recent years. This growth is due to the flexibility, low cost, simplicity, and user mobility offered by the technology. Such networks are being deployed widely in homes, offices, schools, shops, hotels, warehouses, factories, and almost anywhere that people live and work.

Despite the potential benefits of WLANs, one of the challenges faced by network researchers and engineers of WLANs is to increase capacity (per user) and quality of service (QoS) of a typical WLAN with a medium-to-large number of users. While there are many factors influencing the performance of WLAN, wireless medium access control (MAC) protocol is found to have the most significant. This is because MAC protocol is the main element that determines the efficiency of the sharing of the limited wireless channel bandwidth since it coordinates data transmissions on the network. In this talk we discuss various methods/strategies of improving WLAN performance. These methods include designing a better MAC protocol by modifying the existing ones, cross-layer design optimisation, ways of reducing transmission overheads, and send more data (payload) under good channel conditions. WLAN design guidelines for optimum system design and deployment will be discussed. Empirical results will be presented to verify the system performance. This talk is suitable for a general audience.



Nurul I Sarkar is a Senior Lecturer (Auckland University of Technology, New Zealand) specializing in computer network design, optimisation and performance evaluation. He is regularly invited to give keynote talks on his field of specialization at various national and international forums. He has more than 16 years of teaching experience in universities at both undergraduate and postgraduate levels and has taught a range of subjects, including computer networking, data communications, wireless technologies, network security, computer hardware, and eCommerce. He holds a PhD in

Electrical and Electronic Engineering (Field of study: Wireless networks) from the University of Auckland. His first edited book entitled Tools for Teaching Computer Networking and Hardware Concepts has been published by Info Science IGI Global in 2006, which has received a lot of commendation worldwide.

Nurul has published numerous technical articles in refereed international journals, conferences, and book chapters. His research appeared in various journal and conference proceedings, including IEEE Transactions on Education, International Journal of Business Data Communications and Networking, Journal of Selected Areas in Telecommunications, International Journal of Wireless Networks and Broadband Technologies, Measurement Science & Technology, International Journal of Electrical Engineering Education, International Journal of Information and Communication Technology Education, and SIGCSE Bulletin.

Nurul has had several externally funded research grants, including a TEC collaborative research grant of total nearly \$650K, TechNZ grant in partnership with Dawson Controls Ltd., BuildIT and University of Auckland. He was the co-recipient of

the 2009 IJICTE Editor's award for outstanding paper for a research article on Miniproject-based learning as an effective tool for teaching advanced computer networks to graduate students. He was also the co-recipient of the 2006 IRMA International Conference Best Paper Award for a fundamental paper on the modelling and simulation of wireless networks.

Nurul's research interests are in multi-disciplinary areas, including wireless network architecture, wireless MAC and routing protocols, multiple quality of services for WLANs, optimization of high-density wireless networks, wireless mesh networks, cognitive radio networks, network performance modelling and evaluation, radio propagation measurements, network security, and tools to enhance methods for teaching and learning computer networking and hardware concepts.

Nurul is a Senior Member of IEEE. He serves as guest editor for AP Journal of Networks and member of various international editorial review boards. He previously served as an associate technical editor for IEEE Communications Magazine, editor for Encyclopaedia of Information Technology Curriculum Integration book series, and chairman of the IEEE New Zealand Communications Society Chapter.

Nurul served as TPC co-chair for mobile and wireless networking track (IEEE ATNAC 2010) and wireless and communication track (IEEE TENCON'10). He was a local organising committee member for hosting Asia Pacific Computer Communications (APCC) Conference 2010 in Auckland. He served as TPC member for various leading networking conferences including IEEE Globecom, ICC, WCNC, UbiCoNet, ISCC, ICCS, ICNC, and ICCIT as well as track and session chairs for several national and international forums.

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