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of Engineering the Future

Institute of Electrical and Electronics Engineers
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IEEE

Queensland Section

NEWSLETTER

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Message from the Chair IEEE Queensland Section

Mr Abbas Bigdeli

Welcome from the Chair

Welcome to the August 2009 Edition of the IEEE Queensland Section newsletter. This year marks the 125th Year for the IEEE, a great milestone for the organisation that is being celebrated across the IEEE. Over the years, the Queensland Section has conceived and managed a large array of activities and enjoyed meeting a wide cross-section of our membership. I urge you, as an IEEE member, to become involved in the section's activities, especially in this celebratory year, so that we can all benefit from our collective interest and enthusiasm.

May I extend a special welcome to all our new IEEE members in 2009. Perhaps you are a student or a recent graduate just embarking on your engineering career. You will find that participating in IEEE activities is an excellent way to meet fellow engineers on both a professional and a social basis and to develop friends and networks that will last a lifetime. We look forward to seeing you at our upcoming events!

You may recall from an announcement circulated earlier in the year that our Chair Elect for 2009, A/Prof. Joe Dong, resigned in January. I was to become the Vice Chair Elect 2009. According to the MGA (Member & Geographic Activities) Operations Manual and based on further clarification given by the IEEE HQ, I was asked to step in as the new Chair 2009. This appointment was endorsed by the executive committee in January. It is a great honour to be serving the Queensland Section as the Chair of the executive committee in 2009. As I stepped in to this role unexpectedly, I am thankful for all the support and guidance I am receiving from the executive committee in general and the past Chairs, Prof. Tapan Saha and A/Prof Vaughan Clarkson in particular.

I also thank you, the members of IEEE in Queensland, for your continued support and wish you success and happiness in 2009. Hopefully your membership will bring you a little of both.

Changes to the Executive Committee

Following my appointment as the New Chair for 2009, the position of Vice Chair was vacated. Again the committee had to seek advice from IEEE HQ on this issue. Based on the advice received, the Executive Committee was empowered to appoint a new Vice Chair until the election at the next AGM. I am pleased to announce that Mr. Roelof Swanepoel was appointed as the Vice Chair for 2009. Roelof has considerable enthusiasm, expertise and experience in IEEE matters and I know that in him we have a great Vice Chair and perhaps future Chair for the Section.

Recently we have had yet another early departure from the Executive Committee. Our 2009 Secretary, Mr. Andrew Thomas resigned from his office following a career move that would make it very hard for him to attend Committee meetings. Mr. Bart Sedgwick has kindly accepted to step in for the rest of the year. We wish Andrew all the best in his new career.

All other Section and Chapter offices have remained unchanged since what was announced at the AGM in December 2008.

Region 10 Meeting

On February 28 and March 1, I represented the Section at the Region 10 Meeting in Hanoi, Vietnam. I was accompanied by the Vice Chair, Mr. Roelof Swanepoel. This was my first time attending the Region 10 meeting and I found it a very interesting and informative. It was a great place to share information and experience with other Section Chairs around the Asia Pacific region. We were also able to meet face to face with officers from IEEE HQ, including the current President. Region 10 continues to be the largest Region in the IEEE.

On the evening of the Region 10 meeting, I represented our Section at the Australian Council meeting where other Chairs from other Australian Sections were present. We discussed ways to better coordinate activities in Australia and share ideas and DL speakers.



Group photo of R10 2009 Delegates from Australia and New Zealand. Queensland Section Chair Mr Abbas Bigdeli (back centre), Vice-Chair Mr Roelof Swanepoel (back, left), Immediate Past Chair A/P Vaughan Clarkson (front, left)

Notification of the 2009 Annual General Meeting and Dinner Lecture

Mr Roelof Swanepoel
Vice-Chair, Queensland Section

Queensland Section's Annual General Meeting and Dinner will be held on the evening of **Friday 4 December 2009**. The venue this year has been selected as University of Queensland Club, located on Staff House Road, University of Queensland, St. Lucia.

IEEE members and their partners are welcome to attend the AGM and dinner. Information on times, guest speakers, menus and dinner pricing will be provided at a later stage. This year's AGM is aiming to change the format of the event somewhat, so this is definitely a date to keep open!

Should there be any queries before further information is made available, please contact the vice-chair, Roelof Swanepoel, at roelofs@ieee.org.

Annual Student Thesis Prize Reminder

Mr Roelof Swanepoel
Vice-Chair, Queensland Section

It is that time of the year again for our student members at CQU, Griffith, UQ, QUT and USQ!

The IEEE Queensland Section administers two annual thesis prizes for undergraduate students in Queensland universities: the IEEE Student Thesis Prize and the ICPADM-Mat Darveniza IEEE Student Prize. The former is open to students in all fields of Electrical Engineering and Information Technology, while the latter is restricted to thesis topics in the field of Power Engineering.

Eligibility for entry in the thesis competition, are as follows:

- The student must hold current IEEE student membership.
- The thesis must be submitted in the final year of study.
- For the ICPADM-Mat Darveniza IEEE Student Prize, the thesis must be adjudged to be in the field of Power Engineering.

The prize winners will receive a special certificate endorsed by the chairman of the IEEE Queensland Section, as well as a cheque for \$500.

The thesis entries will be collected by IEEE student branch counsellors from 1 - 11 November 2009. After this, selection of winners will take place, and winners will be notified by Friday 27 November.

For more details on eligibility and process, please refer to the Student Prize page on the Queensland Section homepage: <http://ieee.org/queensland/v2/>

Should there be any queries, please contact the following IEEE Queensland Section committee members:

Mark Griffin (Student Activities Chair) : m.griffin@uq.edu.au

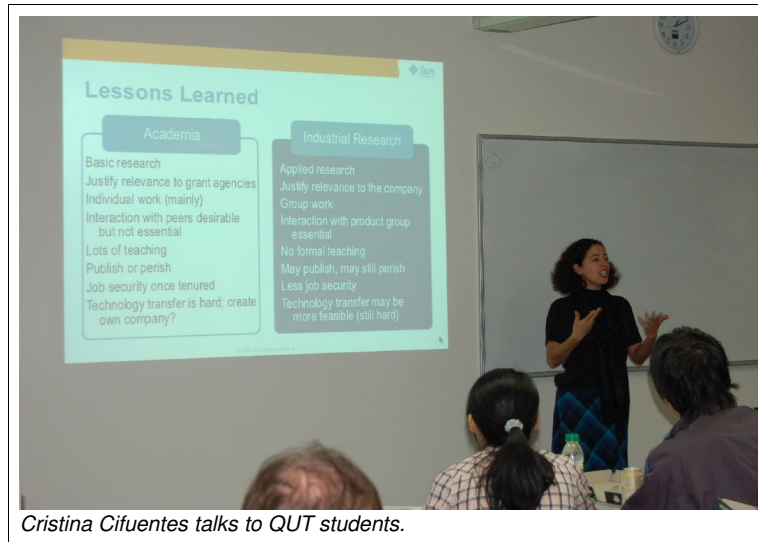
Roelof Swanepoel (Section Vice-chair): roelofs@ieee.org

QUT Student Branch Update

Dr Jasmine Banks
QUT Student Branch Counsellor

An IEEE QUT Student Branch Event was held on Friday 22 May. Our guest speaker was Cristina Cifuentes, a graduate of QUT and currently a Principal Investigator at Sun Microsystems Laboratories in Brisbane. Cristina described discussed how since graduating from QUT, she has held academic and research jobs in the US and Australia, and her current role in leading Sun Labs Down Under.

We also held the traditional raffle where IEEE T-shirts were given away. The event concluded with networking and lunch.



Cristina Cifuentes talks to QUT students.

We are in need of more people to join our team and fill a variety of jobs in the Student Branch such as Secretary, Treasurer, Webmaster, and Event Organiser. Please contact one of the 2009 Office Bearers below if you are interested in joining us.

QUT Student Branch Office Bearers 2009

Chair: Jishu Das Gupta (j.dasgupta@qut.edu.au)
Vice Chair: Chris de Vries (cdevries@ieee.org)
Branch Counsellor: Dr. Jasmine Banks (jbanks@ieee.org)

GOLD Affinity Group Update

Mr Robert Ellen
Chair, Queensland GOLD Affinity Group

Report of 2008 Events

The Queensland Section GOLD Affinity Group held three events towards the end of 2008.

The first event was on the commercialisation success story of local Ground-Penetrating Radar company Groundprobe. Dr David Noon, CCO of Groundprobe, talked about how Groundprobe bootstrapped itself from an academia-based CRC to a world leader in the application of Ground-Penetrating Radars for open-pit mining slope stability measurement. This event was held jointly with Engineers Australia, ITEE Branch.

The GOLD AG also hosted an educational seminar *Financial Success in the Current Context*. This was given by Mr Scott Francis and Mr Scott Keefer from A Clear Direction Financial Planners - Scott Francis having published many articles in the Australian financial industry. This talk was held in December, during some of the more fearful times of the Global Financial Crisis. Mr Francis and Mr Keefer provided an insight into the crisis and provided some helpful financial information and strategies.

The third event of the year was a technical presentation given by visiting IEEE Systems, Man and Cybernetics Society President Professor Daniel Yeung, from South China University of Technology. The GOLD AG co-hosted Professor Yeung's talk during his visit to Brisbane with NICTA. His talk was on the topic of Generalisation error models for defining the accuracy of prediction in pattern recognition

Upcoming Event – IT Incubators

The GOLD AG will be hosting an event (jointly with Engineers Australia, ITEE Branch) on IT Incubators. Peter Allison from I.Lab, a Brisbane-based incubator, will present on the incubator industry and present some of the success stories. This event will be held on Thursday November 26 at Engineering House, Upper Edward St, Brisbane CBD at 5:30pm. Please stay tuned for an E-Notice with details, or register you interest in attending now by emailing Robert Ellen (rellen@ieee.org).

GOLD Affinity Group Networking Site Presence

You may be aware that the IEEE Queensland Section has a Group on the popular professional networking website linkedin.com. Recently the Queensland GOLD AG formed a Sub-Group under the Queensland Section group. We encourage all IEEE members who are on LinkedIn to join the Queensland Section group and all those interested in GOLD to join the Sub-group.

We are also developing a group on the popular social networking website facebook.com which will be available shortly.

The intention is to augment the current communication between the GOLD office bearers and GOLD members. We will, among other things, post news and notifications to these services, however all members will continue to receive event-notification via the E-Notice service.

Aerospace and Electronic Systems Chapter Update

**Mr Robert Ellen
Chair, AESS Queensland Chapter**

Report of Previous Events

Since the last report, the AES Chapter has held two technical seminars.

The first was the *Tiger ARH EMI/EMC Certification* presentation, given by Mr Mark Cook, Senior Systems Engineer at Nova Defence. Mr Cook spoke about the process for EMI/EMC certification of the Australian Defence Force's compliment of Tiger Armed Reconnaissance Helicopters (ARH). After discussing general background information about the ARH, Mr Cook described the detailed process of certifying the French-designed and Australian-built machines to military standards. This talk was well attended by members of the Queensland aerospace EMI/EMC industry and following the talk a lively discussion ensued regarding certification processes and standards.

The second technical seminar was *Vigilare: A Complex Systems Integration Project*, given by Mr Lee Davis and Mr Don Cameron of Boeing Defence Australia. Vigilare is a project for the the acquisition of an Air Defence Ground Environment (ADGE) system for the Royal Australian Air Force (RAAF). Mr Davis, Deputy Program Manager, and Mr Cameron, System Architect described the systems engineering and systems integration aspects of the project. Also discussed were the hardware and software design of the system. A very interesting video of the user interface running a real-time battle simulation was shown.



Mr Mark Cook of Nova Defence describes some features of the Tiger ARH



Mr Lee Davis of Boeing Defence Australia explains a video of a real-time battle simulation in Vigilare



Mr Cook receives thanks from AES Chapter Chair Mr Robert Ellen

Upcoming Aerospace and Electronic Systems Distinguished Lecture

The Queensland AES Chapter is proud to announce its first Distinguished Lecturer visit.

Dr George T. Schmidt from Massachusetts Institute of Technology (MIT) will be visiting several states in Australia in October, sponsored by the Aerospace and Electronic Systems Society. Dr Schmidt is a Distinguished Lecturer in the area of the Global Positioning System (GPS) and Inertial Navigation Systems (INS). He will be talking on the topic of *Global Positioning System and Inertial Sensor Technology Trends for Highly Integrated Platform Navigation Systems*. Dr Schmidt's presentation will be in Brisbane on Monday October 19 at QUT Gardens Point Campus S-block Level 12 at 5:30pm. An E-Notice email will be sent to AES member however we encourage anyone wishing to attend Dr Schmidt's lecture on October 19 to register their email contact details with Robert Ellen (rellen@ieee.org).



George T. Schmidt

Global Positioning System and Inertial Sensor Technology Trends for Highly Integrated Platform Navigation Systems

Abstract

This presentation presents a roadmap for the development of inertial sensors, the Global Positioning System (GPS), and integrated inertial navigation system (INS)/GPS technology. This roadmap will lead to better than 1-m accuracy, low-cost, moving platform navigation in the near future. Such accuracy will enable military and civilian applications which were previously unthought-of a few years ago. After a historical perspective, a vision of the inertial sensor instrument field and inertial systems for the future is given. Accuracy and other planned improvements for GPS are explained. The trend from loosely-coupled to tightly-coupled INS/GPS systems to deeply-integrated INS/GPS is described, and the synergistic benefits are explored. Some examples of the effects of GPS interference and jamming are illustrated. Expected technology improvements to system robustness are also described. Applications that will be made possible by this new technology include personal navigation systems, robotic navigation, and autonomous systems with unprecedented low-cost and accuracy.

Biography

George T. Schmidt is a Distinguished Lecturer for the Institute of Electrical and Electronic Engineers (IEEE) Aerospace and Electronic Systems Society. He is Editor-in-Chief of the American Institute of Aeronautics and Astronautics (AIAA) Journal of Guidance, Control, and Dynamics. He is also a Lecturer in Aeronautics and Astronautics at the Massachusetts Institute of Technology (MIT) and an industry consultant in guidance, navigation, and control. He is currently Director of the NATO Research and Technology Agency (RTO) Lecture Series on Low Cost Navigation Sensors and Integration Technology. He is an AIAA Fellow, an IEEE Life Fellow, and he is an elected member of the Russian Federation, Academy of Navigation and Motion Control. In 2007, he retired as the Director of Education at the Charles Stark Draper Laboratory, Cambridge, Massachusetts. Prior to that position, he was the Leader of the Guidance and Navigation Division and Director of the Draper Guidance Technology Center. His major technical activities have been in control system design for missiles, aircraft, and manned spacecraft; Kalman filtering applications; and integration techniques for high-resolution synthetic aperture radars, satellite navigation systems, and inertial sensors. He has served the NATO RTO (formerly AGARD) in many positions since 1968, including as a U.S. member of the Guidance and Control Panel. He has received several awards including the AIAA International Cooperation Award in 2001 and the NATO RTO highest technical award, the von Kármán Medal in 2005. He is author or contributing author of more than 80 technical papers, reports, encyclopedia articles, and books. He received his S.B. and S.M. degrees in Aeronautics and Astronautics from MIT and his Sc.D. in Instrumentation from MIT.

Computer Society Chapter Update

Dr Philip Machanick
Vice-Chair, Queensland Computer Chapter

The chapter held a seminar entitled *Multi-Core-Architectures: The new challenge for computer science* on Tuesday 7 April 2009 at the University of Queensland, St. Lucia. The presenter was Professor Ulrich Rueckert, from the Heinz Nixdorf Institute, University of Paderborn, Germany.



Prof Rueckert reported on the relative simplicity for hardware designers of increasingly large numbers of cores in future designs. However he pointed out that the really big challenges are for software designers, as multiprocessor applications have always presented serious difficulties in the past. He offered the challenge of overcoming those difficulties to the computer science community. He presented the view that high processor utilisation may not be a major goal in future systems designs, but rather higher yields (one bad spot in a single-core chip means the whole thing has to be thrown away), and other performance optimisations such as balancing power output and throughput may become increasingly significant as the cost of idle processors becomes increasingly insignificant.

Control Systems / Robotics & Automation Joint Chapter Update

Assoc. Prof. Duncan Campbell
Chair, CSS/R&A Queensland Joint Chapter

This newsletter is our first opportunity to report on the IEEE CSS/RA event hosted in December of 2008. We were indeed fortunate to have a seminar presented by Professor Gilles Coppin, from Telecom-Bretagne in France, on *Cognitive approaches to human decision making and human-machine cooperation in complex autonomous systems*. The seminar was held at QUT on December 18 and, despite the potential clashing with festive season activities, 23 attendees from many discipline areas attended and participated in discussion before and after the presentation. We thank Prof Coppin for taking time out of his family's Christmas holidays (on their way to New Zealand) to spend time with us. I know he certainly enjoyed meeting the many people and sharing his research.



Professor Gilles Coppin answers audience questions after his talk at QUT

The chapter has a number of events planned for later in the year. One of these events will be held in Toowoomba and hosted by Prof John Billingsley at USQ. We are hoping to time the event to be coincidental with the Carnival of Flowers giving the option of enjoying this Spring time celebration.

This year, the Joint Chapter celebrates its tenth year. We certainly would like to acknowledge and celebrate this special anniversary in some way and are open to suggestions. Please contact me with any suggestion you might have.

Contact List of your Volunteer Office Bearers for 2009

NOTE: full contact details may be found at <http://www.ewh.ieee.org/r10/queensland/OfficeBearers.html>

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