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Institute of Electrical and Electronics Engineers  
Queensland Section (ARBN 078576495)  
[www.ieee.org/queensland](http://www.ieee.org/queensland)

IEEE  
*Queensland Section*  
NEWSLETTER

September 2012

Volume 15 – Issue 2  
Print Post Approval No. PP4458860011  
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## Message from the Queensland Section Chair

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This is our second edition of the newsletter for 2012. As I reported to you in the previous newsletter, this year we are focusing on revitalising our Section by assisting the less active chapters and affinity groups to ensure they deliver events to their respective members.

As some of you may have already noticed, our website has finally been updated with lots of new information and links. This is the best way for our volunteers to communicate to members as well as the community as a whole.

I am pleased to report that most of our technical chapters have held several events through the year to date and even more are planned for the remaining months of 2012. I invite you to see the details of the upcoming events in this newsletter. You will always find detailed information about the scheduled events in our newsletters and our brand new website ([www.ieee.org/queensland](http://www.ieee.org/queensland)).

I am also pleased to report that our Section hosted the first Teacher In Service Program on 1-2 September in Brisbane. It was well attended and promises to be a great initiative for our members involvement in education in Queensland. Please see full details in this newsletter and the next newsletter.

As we approach the end of the year, over the next few weeks you will receive various call for nominations to fill in the volunteer positions within the Section for 2013. I encourage every member to consider nominating themselves for the various chapter and section offices. We are in need of fresh ideas on the committee.

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### IEEE Queensland Section Annual General Meeting Date Claimer

The 2012 IEEE Queensland Section Annual General Meeting and Dinner Lecture will be held on the evening of the **Thursday the 29th of November**, at The University of Queensland St Lucia campus. Please reserve this date in your calendar for what is sure to be an enjoyable evening.

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### Teacher In Service Program

Mark Griffin  
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and  
Mike Robinson

*The Teacher In-Service Program (TISP) provides a forum for IEEE volunteers to demonstrate the application of engineering, science and mathematics concepts by sharing their real-world experiences with local pre-university educators.*

*IEEE offers training workshops for its volunteers on how to provide in-service programs to local pre-university educators.*

[http://www.ieee.org/education\\_careers/education/preuniversity/tispt/index.html](http://www.ieee.org/education_careers/education/preuniversity/tispt/index.html)

Queensland Section's implementation of the IEEE Teacher-in-Service Program (TISP) is being rolled out in Queensland next year, and started with a workshop in Brisbane on September 1st and 2nd 2012. Representatives from Education Queensland, the CSIRO, Engineers Australia, the Catholic Education Office, the Independent Schools Association of Queensland, the Science Teachers Association of Queensland and the Queensland Minerals and Energy Academy attended the conference, as well as approximately 50 IEEE volunteers from Queensland and Northern Australian sections. The workshop was led by Lynn Bowlby and Yvonne Pelham from the IEEE Educational Activities Unit in Piscataway, New Jersey. Anyone interested in joining the TISP initiative next year should contact Mark Griffin for further details.

## News from the UQ Student Branch

Vaughan Clarkson  
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The UQ IEEE Student Branch has been active again this year, with an enthusiastic and well-populated committee. A new initiative this year was a two-hour tutorial session, free of charge to students, held on 17th May. At this study session, Student Branch volunteers encouraged students to discuss any problems they were having with their current coursework. The volunteers led the students in discussions and assisted in any problems with learning materials. This helped create a sense of community amongst the students. UQ Branch members had volunteered their time to organise the event and had carefully chosen the date so that students could make the most out of this time with their preparations for assignments and exams. This session also focused on materials for courses that had been surveyed and were chosen by them as the 'most wanted' for extra help. Overall, we were glad to see that students had enjoyed the session and understood more about the mission of IEEE.

The Student Branch has also cooperated with the SP/Comms Chapter in co-hosting the seminar by Assoc. Prof. Brent Petersen, from the University of New Brunswick, Canada, held at UQ on 17th August. Afterwards, a pizza lunch was held. The Student Branch will also co-host the upcoming Distinguished Lecturer visit by Dr. James Johnston on 10th September. Please see the report on the SP/Comms Chapter elsewhere in this issue for further details.

As there may not be another opportunity to report in the Qld Section newsletter this year, I'd like to give particular thanks to the Student Branch Chair, Ismail Mohamed, for his volunteer service this year. Under his leadership, the Student Branch has been more vibrant than ever, with a committee that will continue to serve into 2013, albeit that Ismail has announced he will not seek to renew his term as Chair. I'd also like to thank Prof. Tapan Saha, who stood in for me as Counsellor while I was on sabbatical in the first half of this year.

At the time of writing, I am conducting the call for nominations for offices in the Student Branch in 2013. Please look out for an IEEE e-notice on this subject. If you are a UQ IEEE student member who would be interested to volunteer, please let me know.



*UQ Student Branch volunteers (LtoR) Mio Nakatsuji-Mather, Lavish Lalwani, Ebrahim Khalil and Ismail Mohamed at UQ's First Year Engineering Learning Centre, setting up for a recruitment drive in Semester 1.*



*UQ Student Branch volunteers with students at the Student Branch's tutorial session on 17th May.*

## News from the Graduates of the Last Decade Affinity Group

Robert Ellen  
Chair, GOLD AG  
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For the third consecutive year, representatives of the IEEE Queensland Section as well as general IEEE members, under the banner of GOLD, volunteered to be judges at the third annual Young ICT Explorers event, held at the University of Queensland on Saturday 11th of August.

*Young ICT Explorers is a not-for-profit competition, which has been created by SAP to encourage school students to create their best Information and Communication Technology (ICT) related projects.*

*The competition's alignment with the school curriculum enables students to apply what they learn in their ICT classroom to develop a technology related project. At the judging event, students have the opportunity to present their project to a judging panel of academia, industry partners and ICT professionals. Each project is assessed on the criteria of creativity, uniqueness, quality, level of difficulty and project documentation.*

<http://www.youngictexplorers.net.au>

The section has keenly supported this initiative since inception through the provision of volunteer judges. The quality of the entrants in all age categories (years 4 to 12) was extraordinary. The entrants came from 27 schools (plus 2 schools from Cairns that were invited but unfortunately could not make it), included 217 students, 94 projects, and 37% female participants. We look forward to next year's event. Below are some shots of the entrants, parents, teachers and volunteers.



Used with permission from <http://www.flickr.com/photos/yicte/sets/72157631094180310/>

## News from the Women in Engineering Affinity Group

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### Previous Events

In July, IEEE WIE QLD and ACS-Women joined forces to organise a joint event entitled "CHANGE MANAGEMENT - It's not just a girl thing".

There is a growing international acknowledgement that change management is a critical success factor to delivering benefits of programs and projects. Two presenters, Marie-Claire Grady (Managing Director 3RD VIEW Consulting) and Stuart Waddington (Director / Business Performance Facilitator at New Arenas Capital Pty Ltd), shared their vision for the importance of change management and outlined some tools and examples for this. There were over 50 attendees at the talk and lots of networking both before and after the event.

Attached on the next three pages, in photo-static form, is a report on WIE activities at the recently held in Brisbane IEEE World Congress on Computational Intelligence (WCCI).

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## News from the Aerospace and Electronic Systems Chapter

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### Previous events for 2012

Steve Ashfield gave a seminar on "The Case of the Missing Munition: Aircraft System Safety" at UQ on 28 March 2012.

Garry Einicke presented on "The Use of Energy Constraints within Filtering and Smoothing" at QUT on 6 August 2012.

### Upcoming Events

Two further events are planned for 2012. A proposal has been submitted for Distinguished Lecturer Prof. Larry Chasteen to present several lectures on the subject of National Missile Defense during the week 19-23 November 2012. We are also requesting that Dr Alex Zelinsky, Chief Defence Scientist, gives a presentation in Brisbane during November 2012.

## Women in Engineering WCCI 2012 Report

The IEEE Women in Computational Intelligence (WCI) Subcommittee and the Women in Engineering (WIE) Queensland Chapter panel and reception at IEEE WCCI in Brisbane on Tuesday 12th June 2012. The event was attended by a total 63 men and women from 29 countries (See Figure 1).

The event was co-chaired by Dr Keeley Crockett (Chair IEEE CIS Women in Computational Intelligence Society) and Dr Mary Tom (IEEE Women in Engineering, Queensland Chapter) and was opened by the President of the IEEE Computational Intelligence Society Professor Marios M. Polycarpou (Figure 2).

The panel entitled "Attracting and Retaining Women in the development of a Smart World" featured panellist's Professor Gary Yen (Past president of the IEEE Computational Intelligence Society who discussed the role of women affinity groups. Dr Shelly Brown (Interim Chief Executive Officer (VSPC)) who addressed the issue of gender balance in computing and engineering work places. Professor Sushmita Mitra (Indian Statistical Institute, Kolkata.) who examined gender imbalance in India and Professor Valerie Cross (Miami University, Ohio) discussed the importance of coaching and mentoring young researchers. Following the panel a lively discussion took place and some thought provoking questions were asked and discussed.

Following the panel, attendees networked outside over canapés and drinks providing opportunities to discuss research areas and form new friends.

Thank you to all the organisers, the panellist's and both CIS and WIE who made this event possible.



Figure 1: Attendee Geographical Data (Source: Eventbrite)



**Figure 2: Welcome Address by President of the IEEE Computational Intelligence Society Professor Marios M. Polycarpou**



**Figure 3: Professors Sanaz Mostaghim, Valerie Cross and Pauline Haddow**



**Figure 4: Professor Dipti Srinivasan, Professor G A Vijayalakshmi Pai and DR Mary Tom**



**Figure 5: Networking at the reception.**

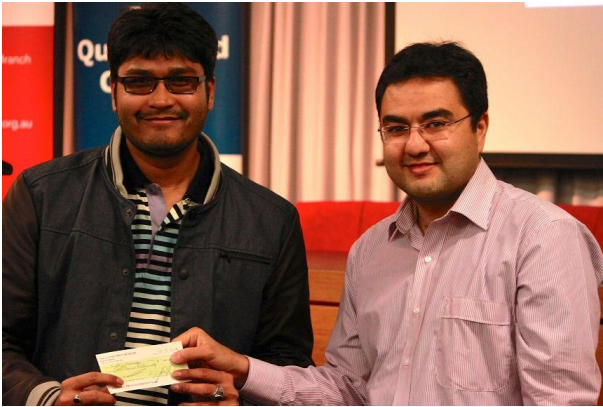


## News from the Power and Energy Chapter

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### Student travel award

The Queensland PES chapter established a \$2000 student travel award in 2010 for student members to attend and present their papers at IEEE PES General Meeting conferences. In 2012, the chapter received 9 applications. The prize committee carefully reviewed all received applications and finally decided to equally share the prize between the best two papers which were successful to obtain exact same mark. Mr. Sumit Mazumder from Queensland University of Technology (QUT) and Mr. Md. Rakibuzzaman Shah from the University of Queensland (UQ) are the winners of 2012 IEEE PES Travel Award.



*Mr. Sumit Majumder (Left) receiving the \$1000 cheque from the PES chapter Chair Dr Mehdi Eghbal*



*Mr. Md. Rakibuzzaman Shah (Left) receiving the \$1000 cheque from the PES chapter Chair Dr Mehdi Eghbal*

### Technical Seminars

Since the last report, the PES chapter, jointly with the Electrical and ITEE Branches of Engineers Australia, organised the following seminars:

**Seminar title:** *Precision Spatial Framework, the opportunity of a new infrastructure for Queensland*

**Speaker:** *Mr. James Bangay, General Manager of the Ergon Energy ROAMES group*

**Date & time:** 28 June 2012 (Thursday) Time: 6:00pm - 7:00pm

**Venue:** Hawken Auditorium-Engineers Australia, 447 Upper Edward St, Spring Hill, Qld

**Seminar title:** *Powerlink Queensland's 2012 Annual Planning Report*

**Speaker:** *Terry Miller, BE(Elec), RPEQ - Manager Network Development, Powerlink Queensland*

**Date & time:** 11 July 2012 (Wednesday) Time: 6:00pm - 7:00pm

**Venue:** Hawken Auditorium-Engineers Australia, 447 Upper Edward St, Spring Hill, Qld

**Abstract:** Powerlink's 2012 Annual Planning Report provides information about the outlook for the electricity transmission network in Queensland including the state's forecast electricity requirements and details of network limitations that are expected to emerge in future years. Forward planning and rigorous analysis of the power system is essential to ensure that any necessary augmentations to the state's electricity transmission network are identified, approved and implemented in a timely manner so that reliability standards are maintained at the lowest long run cost to customers. The analysis identifies opportunities for non-network solutions, including demand side management, as alternatives to investment in transmission infrastructure and provides generators and major energy users with information to assist them in their decision making. Details of development of the transmission network, and potential development needs in future to meet Queensland's growing electricity demand are also provided.

PES News cont'd...

**Seminar title:** *Suboptimal model based engine control and calibration*

**Speaker:** Associate Professor Chris Manzie, Department of Mechanical Engineering at The University of Melbourne

**Date & time:** 3 August 2012 Time: 10:00am - 11:00am

**Venue:** Room 78-622, GP South Building, the University of Queensland

**Abstract:** In this talk Chris summarised some of the recent work his group has performed in engine and after treatment modelling and frameworks for model reduction. He then focused on two key examples that demonstrated that relatively simple physics-based models could be effectively used with model based control and optimisation approaches to deliver close to optimal results in engine control and calibration. The first example considered model predictive control of a hydrogen internal combustion engine at idle to deliver improved torque disturbance rejection capability and allow lowering of the idle speed set point, which in turn had positive impacts on fuel economy. The second case study investigated the use of analytical and numerical tools to aid in the calibration of automotive engine controllers that implicitly and explicitly satisfy legislative emissions constraints.



*Mr. James Bangay presenting the opportunity of a new infrastructure for Queensland*



*Mr. Terry Miller presenting the Powerlink Queensland's 2012 Annual Planning Report*

## Upcoming Technical Workshop

The PES chapter, jointly with Engineers Australia, is organising a technical 2-day workshop on '**Ageing of Electrical Insulation Systems and Power Cable Diagnostics**' in October 2012. The workshop will be held at Hawken Auditorium, Engineering House, Brisbane CBD. **Dr. John Densley**, IEEE Distinguished Lecturer from Canada, is the main lecturer. The workshop will discuss:

- 1 General Ageing of Electrical Insulation Systems
  - Ageing of gaseous, liquid and solid insulations.
  - Factors that affect the ageing thermal, electrical, ambient and mechanical (TEAM) stresses
  - Interactions between stresses.
  - Accelerated aging tests and ageing models.
  - Standards
  
- 2 Cable Ageing and Diagnostics
  - a) Extruded Cables
 

<ul style="list-style-type: none"> <li>• Ageing Mechanisms</li> <li>• Water treeing</li> <li>• Electrical treeing and tracking</li> <li>• Thermal ageing and dielectric heating</li> <li>• Thermomechanical effects</li> <li>• Neutral corrosion</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic tests</li> <li>• Withstand (HiPot) – AC, VLF, DAC, DC</li> <li>• Dissipation factor, Dielectric spectroscopy</li> <li>• Infra-red</li> <li>• Insulation resistance</li> <li>• Capacitance</li> </ul>
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- Connector overheating
- Environmental effects
- Overvoltages
- Partial discharge
- Visual inspection

b) PILC and other impregnated cables

- Ageing Mechanisms
- Thermal ageing
- Oil leaks
- Moisture ingress
- Dielectric heating
- Corrosion
- Tracking - treeing
- Overvoltages
- Thermomechanical
- Diagnostic tests
- Withstand (HiPot) – AC, VLF, DAC, DC
- Gas in oil analysis
- Dissipation factor, Dielectric spectroscopy
- Insulation resistance
- Capacitance
- Partial discharge
- Visual inspection
- Infra-red

The presentation will focus on which diagnostic test is most sensitive to a particular ageing mechanism and what standards have been developed or are under development



## News from the Signal Processing & Communications Joint Chapter

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### Previous Events

This year, the SP/Comm Chapter has held two events so far. On 12th April, Mr. Ollencio D'Souza, Director of Technology Care, conducted a workshop titled 'Video & Audio Analytics' with some hands-on examples at Queensland University of Technology. This workshop focused on two aspects; Video & Audio Analytics that adds another dimension, i.e. detection and recognition, to the technologies used to support human frailty (such as attentively, distraction, memory and loss of objectivity).

The workshop explored the science behind and the benefits of the technology and then took the audience through hands on practical applications of the technology in applications such as:

1. Business Intelligence
2. Transport Management
3. Fire Safety
4. Security & Safety
5. Biometrics

It was well attended by people from industry, academia.

On 17th August, Assoc. Prof. Brent Petersen, from the University of New Brunswick, Canada, presented a seminar entitled 'The MIMO Multiuser Wireless Bandwidth of a Room'. This seminar was held at The University of Queensland and was co-hosted with UQ Student Branch (see their report, also in this issue). The seminar was followed by a pizza lunch. About 20 staff and students attended.



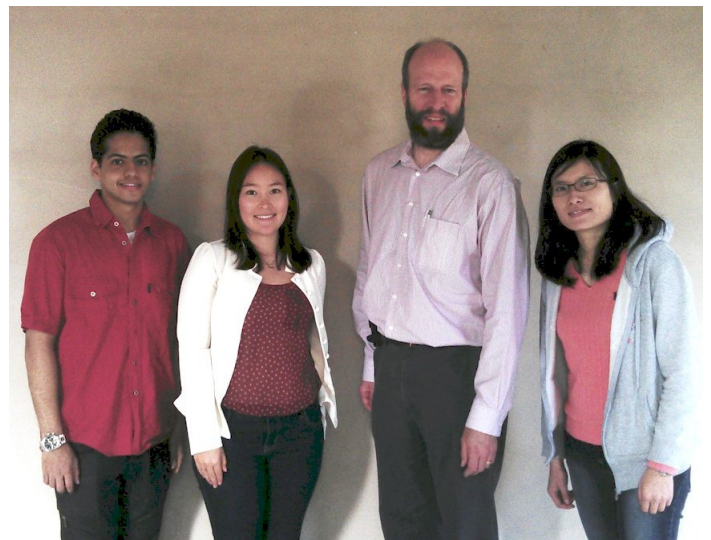
Assoc. Prof. Brent Petersen presents his seminar at UQ on 17th August.

### Upcoming Distinguished Lecture

I'd also like to use this space to give early warning of an upcoming Distinguished Lecturer tour being organised through the IEEE Signal Processing Society. The lecturer will be Dr. James Johnston. Dr. Johnston is known for his many important contributions to audio coding and human hearing. Dr. Johnston was the primary researcher and inventor of the MPEG-2 AAC audio coding algorithm, and a principal contributor to the "MP3" algorithm. Dr. Johnston will be speaking in Brisbane at The University of Queensland on 10th September. This event also will be co-hosted by the UQ Student Branch. Further details to follow.

### Thanks to Dr. Dhammika Jayalath

On a personal note, I'd like to thank Dr. Dhammika Jayalath for his stint as Acting Chair of the Chapter for the first half of this year, while I was overseas on sabbatical.



Assoc. Prof. Brent Petersen (second from right) with UQ Student Branch volunteers (L to R) Lavish Lalwani, Mio Nakatsuji-Mather and I-Ping Weng after his seminar at The University of Queensland on 17th August.