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Institute of Electrical and Electronics Engineers  
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## Editor's Remarks

**MR ROBERT ELLEN**

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A warm greeting to all IEEE Queensland members. You will notice that the newsletter format is slightly different to usual. After some procrastination we've decided to transition to a new workflow and new format. This edition represents an evolution towards what will hopefully be a better looking and easier to publish newsletter. No prizes for guessing the main typesetting tool used, but we hope that the format is not too similar to the academic typographic templates we all know and love.

As always, any feedback, comments or suggestions you have are very welcome. We hope you enjoy this new-look edition.

## Upcoming IEEE Queensland Events

<b>Date</b>	<b>Event Title (click title text to open event info in a web browser)</b>	<b>Speaker(s)</b>
10 July 2013 05:30PM	Power Engineering Research	Professor Tapan Saha
15 July 2013 05:30PM	Nuclear Energy - the implications for Australia	Tony Irwin and Ian Lowe
18 July 2013 06:00PM	IEEE GOLD Social Networking Drinks	
19 July 2013 11:00AM	Dynamic Wireless Networks: Design and Optimisation for Critical Operations	Sanjeev Naguleswaran
23 July 2013 10:00AM	Broadband Satellite Communications on-the-Move	John Logan
07 August 2013 05:00PM	Robotics and Machine Vision in Agriculture	Dr Cheryl McCarthy

See all upcoming section events at [www.ieee.org/queensland](http://www.ieee.org/queensland)

# Message from the Section Chair

**PROF. TAPAN SAHA**

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Welcome IEEE Queensland Section members. This is the second newsletter of 2013. We are already in the middle of 2013. Our chapters and affinity groups are quite busy in organising technical and other activities. Dr Konstanty Bialkowski, chair of MTT/AP Chapter has already organised several events in 2013. Thanks to Konstanty and his team for their wonderful work.

I am delighted to advise you that we have now student counsellors in all major campuses of Queensland Section Universities (e.g. UQ, QUT, Griffith, CQU, USQ). All Chapters and affinity groups have their full committees and they have a succession plan in place for the coming year. Our student Chapters have started organising membership drive functions. They have been utilising the subsidised membership fee benefits for engineering students to join IEEE.

Our Section is sending two volunteers to attend IEEE Region 10 Student/GOLD/WIE Congress 2013 to be held at Hyderabad, India from July 11-14, 2013. Section has nominated Mr. Lavish Lalwani from UQ Student Chapter and Ms. Prachi Redey from GOLD affinity group to attend IEEE Region 10 Congress. I am sure they will bring enormous networking and volunteer experience by attending this event.

The Power & Energy Chapter of Queensland Section have won runner up position for IEEE PES Outstanding Chapter Award for Large Chapters for the 2012 program year. This is our third runner up award in a row for this category. Congratulations to PES Chapter Chair Dr Daniel Eghbal, PES Chapter executive committee and their members.

Currently we have two affinity groups and both are doing great work. Women in Engineering (WIE) have been very active for the last several years and they are doing the same in 2013. Ms. Alex Price is the Chair of Graduates of Last Decade (GOLD) affinity group and she has recently received Region 10 GOLD initiatives grant for the year 2013 for Student/GOLD Trivia Night initiative. Congratulations to Alex and her team.

IEEE QLD Section has been closely working with the local Electrical Branch of Engineers Australia and IET. A number of our chapter activities are planned to be hosted in the Engineers Australia premises and in local industry venues. We will also have a strong presence in the Electrical fraternity Dinner in June 2013. Hope you have wonderful IEEE activities experience in the section. Please keep up to date on our activities by visiting our website:

[ieee.org/queensland](http://ieee.org/queensland)

Photos from the recent 2013 Region 10 Meeting, Chiang Mai, Thailand, March 2-3



*Delegates of the 2013 R10 meeting*



*Australian delegates of the 2013 R10 meeting (Qld Chair, Prof. Saha is front-row, second from right)*

# Update from the GOLD Affinity Group

**MS ALEXANDRA PRICE**

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After a slow start to the year, the Queensland IEEE GOLD affinity group now has a full team of volunteers and recently held their first event for the year.

As of May, the office bearers for Queensland GOLD in 2013 are:

**Chair** Alexandra Price

**Vice-Chair** Prachi Redey

**Secretary** Matthew Zillmann

## Previous GOLD social event

Eleven young engineers attended an afternoon of barefoot bowls on Sunday 2nd June and despite the rain cutting the event short, a good time was had by all. The GOLD affinity group has a number of events planned in the latter half of the year including casual networking drinks, presentations on technical and soft skills topics and a pub quiz in partnership with local student branches.



*Young engineers at the GOLD barefoot bowls event, held on 2nd June*

# Update from CQUniversity Student Branch

**DR MARY TOM**

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## Previous Activities for 2013

### Seminar on Computational Intelligence

**Date:** Wednesday 27th February 2013

**Venue:** CQUniversity Brisbane Campus 160 Ann Street

This event was organized under the leadership of IEEE Student Branch Counselor Dr. Mary Tom and conducted in assistance with the Student Branch Committee. This event was attended by over 45 participants, including 30 Post-graduate Students, 10 Undergraduate students and most importantly the lecturers of CQUniversity, Brisbane Campus. The participants included students from other universities such as Griffith and QUT.

The event was opened by a welcome speech from the Campus Director, Trent McHenry, followed by the official launch of the IEEE Student Branch at Brisbane Campus by the branch counsellor. Prof. Vladimir Estivill-Castro Griffith University presented the seminar titled Computational Intelligence An Overview: Introduction, Applications, and Current Research Challenges which was entertaining, engaging, and enthusing for the audience. The presentation lasted an hour following some interesting questions from the audience.

Vladimir Estivill-Castro is currently team leader of MI-PAL, that participates in the RoboCup 2011, RoboCup 2012 and RoboCup2013 in the Standard Platform League using the Humanoid Robot Nao. His main interests are algorithmic engineering, computational complexity, intelligent data analysis, privacy preserving data mining and knowledge discovery. Prof. Estivill-Castro holds a Ph.D. from the University of Waterloo in Canada and degrees from UNAM in Mexico. He serves in the editorial board of the Journal of Research and Practice in Information Technology, is editor in chief of the series Conferences in Research and Practice in Information Technology.



*Dr Vladimir Estivill-Castro*

The four fields of neural networks, fuzzy systems, evolutionary computation, and intelligent agents, under the umbrella of Computational Intelligence (CI) are making promising contributions in computer vision and image processing, intelligent data analysis, pattern recognition, and many other fields.

The talk provided an introduction to Computational Intelligence and briefly described some of the application areas. Prof. Estivill-Castro also shared some of his rich experience in the application of CI in robotics which was enriched by interesting videos. Nowadays Computational intelligence has got many great challenges in the application areas of understanding the functioning of human brains, nature inspired computing, human-computer interaction, and algorithms for real time handling of huge data. Prof Vladimir explored essential and advanced edges of this emerging technology which have a great importance in the field of Science and research. Different levels and characters of presentations were accepted: presentation of research and scientific results, new ideas, valuable conclusions from experience, state of the art and instructive survey communications.

## Careers Evening

**Date:** Wednesday 3rd April 2013

**Venue:** CQUniversity Brisbane Campus 160 Ann Street

This event was organized under the leadership of IEEE Student Branch Counselor Dr. Mary Tom and ACS Young IT coordinator Martin Bevan-Jenkins, and conducted in assistance with Craig Macdonnell Training, Employment and Career Coaching Coordinator (TECC) of CQUniversity, Brisbane Campus. This event was attended by over 35 participants, including 20 Postgraduate Students, 15 Undergraduate students. The participants included students from other universities in Brisbane area such as Griffith and QUT.

The event was opened by a welcome speech from the TECC coordinator, Craig Macdonnell who chaired the event. The event highlights include three speeches from Industry experts as detailed below and a discussion panel followed by the social activity.

The first speaker, Martin Bevan-Jenkins, Test Consultant, KJ-Ross & Associates provided a very information rich talk exploring the *Landscape of industry demand: current and near future*. Martin is a software testing consultant working for KJ-Ross and associates. Over the last 2 years he has worked with clients in the public and private sector who use both waterfall and Agile SDLC's. His clients include Schneider electric, Microsoft, Department of Community Safety and Department of Education.

Vicki Moore, Project Manager, Department of Community Safety enlightened the audience with the need for *Sustainable skills for a very dynamic industry with evolving technology*. Vicki Moore has been working in the Information Technology field for over 30 years with experience in the government and private sectors in Australia and the United Kingdom. Government experience has included transport, education and emergency services. Private sector experience has included utilities, insurance, banking, airlines and retail. Roles have included Programmer (Cobol and Fortran), System Analyst, Project Leader, Structured Methods Trainer, Project Manager and Business Analyst.

The third speaker Adrian Gee, Technical Manager, Schneider Electric shared his industry experience by delivering a speech on *Graduate skills sought after by industry*. Adrian is a Technical Manager, Senior Developer, and all round geek dad with over 20 years experience in the software industry. He is an advocate of agile development and .NET, and has worked in industries including finance, genetics, government, billing, and search.

The three speakers generously spent their time on a Discussion Panel exposing *What happens behind the closed doors?* which became the focus of the event. The discussions led to many interesting questions from the audience. The talks shared some rich experiences of the speakers who have taken many roles in the industry and been part of several recruitment processes. The speeches enriched the audience consisted of PG and UG students who have been curious and eager to get some insights of the recruitment process in IT industry.

# Update from the Aerospace and Electronic Systems Chapter

**DR GARRY EINICKE**

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## Upcoming AESS Chapter events

*Dr Elliot Duff* (CSIRO) plans to present on the subject of mobile mapping for indoor navigation.

Producing reliable 3D maps of unknown environments can be a useful tool for many applications from street mapping, real estate and mining surveys to searching disaster sites or recording the exact details of a crime scene. But creating these 3D laser maps quickly, reliably and in any environment is currently a major challenge for business and industry. Elliot will be discussing the world's first mobile handheld laser mapping system together with a cloud-based 3D mapping service. The seminar is planned for late June or early July 2013.



*Dr Elliot Duff*

*Dr Mark Davis* (Consultant, USA) is coming to Adelaide for the Radar Conference in September, and plans to a tutorial on Foliage Penetration Radar.

Foliage Penetration Radar is a technical approach to find and characterize man-made obstructions under dense foliage, as well as characterizing the foliage itself. It has applications in both military surveillance and civilian geospatial imaging. The planned seminar will take place at either UQ or the CSIRO in Sep. 2013.



*Dr Mark Davis*

# Update from the Control Systems and Robotics & Automation Chapter

**PROF JOHN BILLINGSLEY**

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## Upcoming CSS/ R&A Chapter event

**Technical Seminar:** *Low-cost machine vision-based automation of labour-intensive tasks for agriculture*

**Speaker:** Dr Cheryl McCarthy, Mechatronic research engineer, National Centre for Engineering in Agriculture

**Venue:** Z469 (4th floor, Z-block) University of Southern Queensland, West Street, Darling Heights, Toowoomba

**Date & Time:** 07-August-2013, 05:00PM to 06:00PM

### Abstract:

Machine vision has the potential to automate agricultural tasks that are typically performed by human visual inspection. Low-cost, off-the-shelf digital camera technologies are of increasing quality and processing capability, thus presenting cost-effective and versatile instrumentation options for infield machine vision systems in agriculture.



*Dr Cheryl McCarthy*

Example applications of low-cost machine vision systems that will be presented are weed spot spraying and bait box surveillance for the honeybee industry. Weeds cost millions of dollars to Australian agriculture annually, through reduced yield and weed control practices. In-crop machine vision-based weed identification has potential to reduce herbicide usage by precisely identifying and spraying weeds from amongst the crop. Low-cost machine vision sensors have the ability to achieve discrimination between weed and crop using shape, colour, texture and height information. Multi-core processing means that the image analysis and selective spraying can occur in real-time as a tractor drives over the crop. Bait boxes at Australian ports are routinely visually inspected by apiary officers for the presence of exotic swarms of bees that could enter Australia by cargo movements, potentially threatening local honeybee populations. Automation of the bait box inspection task has been demonstrated to proof-of-concept stage using a smartphone as a low-cost machine vision sensor inside the bait box. The system has potential use in a network of remotely-monitored bait boxes at ports around Australia.

### Biography:

Dr Cheryl McCarthy is a mechatronic research engineer with the NCEA. Cheryl's research involves developing machine vision and sensing systems to automate tasks in agriculture that are traditionally manual and labour intensive. She has worked on projects for condition scoring of beef cattle, fodder quality assessment for the export hay market and counting of macadamia nuts for automated yield monitoring. Currently her projects include precision sensing of weeds for the sugar, cotton and grains industries, oversize log detection in a timber yard and remote beehive monitoring for improved bee pest surveillance.

Cheryl's PhD was to develop a machine vision sensing system for measuring cotton plant internode length, for potential use as a plant stress indicator for precision irrigation. Cheryl's interests include the application of mechatronic engineering to agriculture, imaging spectrometry and aerial photography.

# Update from the Microwave Theory & Techniques and Antennas & Propagations Chapter

**DR KONSTANTY BIALKOWSKI**  
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## Previous activities for 2013

The MTT-AP chapter has hosted eight events for 2013. Of these events seven were technical seminars from both domestic and international speakers. The topics covered included Terahertz systems, RFID, antennas and computational electromagnetics. A majority of these events were held at the University of Queensland, in St Lucia.

The seminars this year have included:

### 17 January 2013 Seminar

**Title:** Chipless RFID: Revolution in Identification in the New Millennium  
**Speaker:** A/Prof Nemai Karmakar, Monash University, Melbourne, Australia  
**Venue:** The University of Queensland, St Lucia Campus

### 9 April 2013 Seminar

**Title:** Terahertz quantum cascade lasers: physics and challenges in design, growth and fabrication  
**Speaker:** A/Prof Dragan Indjin, University of Leeds, United Kingdom  
**Venue:** The University of Queensland, St Lucia Campus

### 26 April 2013 Seminar

**Title:** The Use of Multiplicity in Antenna and Propagation Engineering for Wireless Communication  
**Speaker:** Prof Karu Esselle, Macquarie University, Sydney, Australia  
**Venue:** The University of Queensland, St Lucia Campus

### 2 May 2013 Seminar

**Title:** The Cell Method for electrical engineering and Multiphysics problems  
**Speaker:** Dr Fabio Freschi  
**Venue:** The University of Queensland, St Lucia Campus

### 10 May 2013 Seminar

**Title:** Maxwell-Plus-Plus: Clifford's Approach to Electromagnetism  
**Speaker:** Dr Andrew Seagar, Griffith University, Gold Coast, Australia  
**Venue:** The University of Queensland, St Lucia Campus



*Prof Karu Esselle presenting his seminar on Multiplicity*

**17 May 2013 Seminar**

**Title:** Maxwell-Plus-Plus: Clifford's Approach to Electromagnetism

**Speaker:** Dr Andrew Seagar, Griffith University, Gold Coast, Australia

**Venue:** Griffith University, Nathan Campus

**20 May 2013 Seminar**

**Title:** Chipless RFID Tag Sensor for Ubiquitous Environment Monitoring

**Speaker:** Emran Md Amin, Monash University, Melbourne, Australia

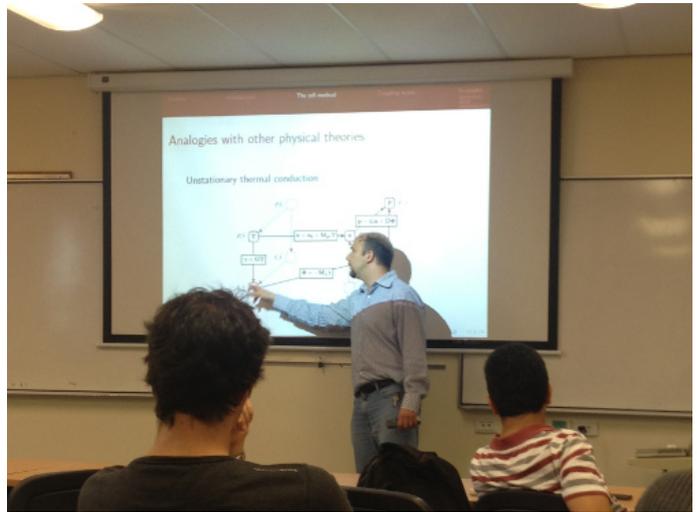
**Venue:** The University of Queensland, St Lucia Campus

For full details including the seminar abstract, please check our website.

<http://ewh.ieee.org/r10/queensland/v2/doku.php/chapters:mttap:start>

**Upcoming event**

We are planning more events for the remaining part of this year, and all upcoming events will be listed on our website. One of the planned events is a workshop tailored for students and other interested parties on the topic of computational modeling using FDTD. FDTD is a good first step in analyzing Maxwells equations for practical outcomes, such as antenna design and microwave imaging. The idea for this workshop was initiated by our Vice-chair: Dr David Ireland. This event and other future will be listed on our website.



*Dr Fabio Freschi presenting his seminar on the Cell Method*

# Update from the Power and Energy Chapter

DR MEHDI (DANIEL) EGHBAL

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## Chapter wins award for the third year running

IEEE Queensland PES chapter won the 2012 Outstanding Large Chapter Runner-up Award. This is the third year that PES chapter has won this award.

## Previous activities for 2013

Archive of all technical seminars and distinguished lectures can be found from PES webpage:

<http://ewh.ieee.org/r10/queensland/v2/doku.php/chapters:pes:start>

## Technical Seminar – Ergon Energy Smart Grid Initiatives

**Date:** 28 May 2013

**Venue:** Ergon Energy, Brisbane



*Mr Greg Caldwell – Dynamic Feeder Ratings*

### Speakers:

Mr Greg Caldwell, Senior Engineer Network Capability & Utilisation from Ergon Energy gave a presentation on *Dynamic Feeder Ratings* – optimising the utilisation of overhead lines and underground cables by integrating real-time environmental and asset condition information to reveal where capacity is available for transfer.

Dr Mike Wishart, Principal Engineer Technology Innovation from Ergon Energy gave a presentation on *Grid Utility Storage System (GUSS)* – an energy storage system for single wire earth return systems being used to perform both peak load reduction (via storage) and provide voltage support (via the control system).



*Dr Mike Wishart – Grid Utility Storage System*



*Dr Lisa McDonald – Creating low-energy sustainable estates of the future*

Dr Lisa McDonald, Manager of Demand Advocacy and Development from Ergon Energy gave a presentation on *Creating low-energy sustainable estates of the future* Ergon Energys collaborative projects working with residential developers to create a framework for low demand residential estates, the creation of a Trade Ally Network and methodologies for engaging SMEs in DSM.

### **Technical Seminar – Extreme weather and volatile pricing in the electricity market**

**Date:** 30 May 2013

**Venue:** Hawken Auditorium, Engineers Australia

**Speaker:** Mr. Paul McArdle, CEO of GLOBAL-ROAM

Paul McArdle is the CEO of GLOBAL-ROAM – a company that helps clients to reduce their stress and cost, and/or increase their revenues, by making the energy market more understandable. In this presentation, Paul spoke about the recent market volatility in QLD over the period summer 2012-13 through till the end of Q1. The analysis presented forms part of a deeper analysis performed by GLOBAL-ROAM as part of a detailed report to be released shortly.



*Paul McArdle at the lectern at Engineering House, Brisbane, after his talk Extreme weather and volatile pricing in the electricity market*

## Upcoming PES Chapter Event

### Technical seminar Nuclear Energy - the implications for Australia

**Date:** 15 July 2013

**Venue:** Engineering House 447 Upper Edward Street, Brisbane, QLD 4000

**Speakers:**

**Tony Irwin** Tony has extensive experience in nuclear power which includes 30 years commissioning and operating 8 nuclear power plants in the UK; regulatory interaction, safety culture, and training in nuclear technology. He worked with Russian engineers to improve safety following the Chernobyl accident, and more recently managed the Lucas Heights OPAL Reactor. He is Chair of Engineers Australia Nuclear Engineering Panel.

**Ian Lowe** Ian has been recognised for decades as a leading climate change scientist. His contributions to environmental science won him a Centenary Medal, the Eureka Prize for promotion of science, the Prime Ministers Environment Award for Outstanding Individual Achievement, the Queensland Premiers Millennium Award for Excellence in Science, and the University of NSW Alumni Award for achievement in science.

**Abstract:**

Nuclear Energy is a very current – and highly controversial – topic of discussion, as Australia endeavours to transition from a fossil fuel dependent to a lower carbon economy, consistent with the targets set for reducing CO2 emissions.

Nuclear energy, promoted as a clean energy solution, is being considered as part of the future stationary energy mix. It is a highly complex process requiring exacting controls.

This event provides an excellent opportunity to hear from two highly credentialed speakers on the advantages and disadvantages of proceeding along the nuclear energy path, including aspects related to technology innovation, fuel supply, energy security, risks, safety, sustainability, and long term radioactive waste storage.

Each speaker will present for 30 minutes, followed by a Q&A session of 30 minutes. Registration link: [engineersaustralia.org.au/events/nuclear-energy-implications-australia](http://engineersaustralia.org.au/events/nuclear-energy-implications-australia)

## PES Outstanding Engineering Award

The IEEE PES Queensland chapter launched the Outstanding Engineer Award in 2010. In 2012 Professor Tapan Kumar Saha, Professor of Electrical Engineering at the University of Queensland, was recognized as the outstanding engineer and the plaque of IEEE Power & Energy Society of Queensland Outstanding Engineer Award was presented to him during the IEEE smart grid seminar on 28 May 2013.

## IEEE Queensland PES Student Travel Award

In 2013 PES chapter received 10 applications from the students of Queensland universities to attend and present papers at the 2013 IEEE PES General Meeting in Vancouver, BC, Canada. Mr. Houman Pezeshki and Nadali Mahmoudi were the winners in 2013 (received \$1000 check each). Award winners will receive a certificate from IEEE Queensland section during the section Annual General Meeting.



*Professor Tapan Saha receives the IEEE PES Outstanding Engineer Award from PES Chapter Chair Dr Mehdi Eghbal*



*Mr Houman Pezeshki*



*Mr Nadali Mahmoudi*

*Award recipients receiving their cheques from PES chapter Chair Dr Medhi Eghbal*

# Your 2013 IEEE Queensland Section Volunteer Office Bearers

## Executive

### Section Chair

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## Chapter & Group Officers

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#### Vice-Chair

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#### Secretary

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### Computational Intelligence Society

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#### Vice-Chair

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### Computer Society

#### Chair

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## Control Systems Society / Robotics and Automation Society

**Chair**

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## Graduates of the Last Decade (GOLD)

**Chair**

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**Vice-Chair**

Prachi Redey

**Secretary**

Matthew Zillmann

## Engineering in Medicine and Biology Society

All positions vacant

## Microwave Theory & Techniques Society / Antennas & Propagation Society

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**Secretary**

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