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INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
(ABN 67 431 648 974)

QUEENSLAND SECTION

2014 ANNUAL GENERAL MEETING
REPORT

UNIVERSITY OF QUEENSLAND
BRISBANE

DECEMBER 3RD, 2014

2014 AGM Report contents:

Section Chair's report	3
Section Vice-chair's report	6
Secretary's report	7
Treasurer's report	9
Acting Newsletter editor's report	12
Webmaster's report	13
Awards and Recognition report	14
Aerospace and Electronic Systems Society Chapter	16
Computational Intelligence Society Chapter	17
Control Systems/Robotics and Automation Societies Chapter	18
Engineering in Medicine and Biology Society Chapter	19
Microwave Theory and Techniques/Antennas and Propagation Societies Chapter	20
Power and Energy & Dielectric and Electrical Insulation Societies Chapter	22
Signal Processing and Communication Societies Chapter	29
CQUniversity Brisbane Campus Student Branch	31
University of Queensland Student Branch	34
University of Queensland PES Student Branch	35

Section Chair's report



PROFESSOR TAPAN SAHA
tksaha@ieee.org

Part A - Review of 2014

I am completing my two years term as the Chair of the Queensland Section executive committee. I was Section Chair for the first time in 2005-06.

Activities during 2014 can be summarised as follows:

- Based on the latest available statistics, our current membership stands at 1167, which is about a 1% increase from the same time last year (1155). Practically our membership has been very stable.
- Most organisational units (chapters and affinity groups) hosted by the section have held at least two meetings in 2014, the minimum required for remaining officially 'active'.
- This year we formed a joint chapter of the Dielectric and Electrical Insulation Society and the Power and Energy Society. I hope this will bring additional audiences to our power engineering technical activities.
- A number of chapters performed outstandingly well in 2014. The Joint Chapter of Dielectric and Electrical Insulation/Power and Energy, the Joint Chapter of Microwave Theory and Techniques/Antennas and Propagation, and the Joint Chapter of Signal Processing/Communications provided a very high level of professional service to our section members. I would like to congratulate the committees of these chapters for their outstanding performance.
- The IEEE Young Professional affinity group organised the 2014 IEEE Australian and New Zealand Student Conference (ANZSCON) in Brisbane in July 2014. ANZSCON 2014 was a great success. Thanks to Ms. Alexandra Price and Ms. Prachi Redey for their hard work and dedication.
- Our student branches had mixed levels of activities. The University of Queensland student branch did exceptional service and they are to be congratulated. Other university student branches have a long way to go.
- The section actively continued to promote student activities and membership drive functions.
- Our volunteers have written articles for Region 10 newsletters. This is a great way to publicize our work in Region 10.
- Our volunteers attracted funding from Region 10 and the IEEE PES parent society on a number of occasions. This is a good way to leverage local activities from outside the section's funds.
- We organised a short course with Engineers Australia that brought good income into the section. I hope this will be continued as well.
- The annual Thesis Prize competition was held again this year. We have selected two thesis prize winners for these awards.
- Eleven executive committee meetings were held in 2014, plus the Annual General Meeting. This year's committee meetings were organised at The University of Queensland's St. Lucia campus. We had very good attendances in the meetings and we provided opportunities for distant members to attend the meetings through Skype. I personally attended all meetings and had a busy time.
- I attended the Region 10 Section Chairs meeting in Kuching, Malaysia in March. This was a great opportunity for me to meet the Region 10 leadership team and IEEE Headquarters office bearers. My proposal to host the 2015 IEEE Region 10 Section Chair meeting on the Gold Coast was not accepted due to high cost implications.

- I attended the IEEE Sections Congress 2014 (SC2014) in Amsterdam, Netherlands, at the Rai Convention Center, from August 22nd to 24th 2014. The Sections Congress is a triennial gathering of IEEE grassroots leadership to network with other section leaders, attend training programs, and develop recommendations to guide the future of the IEEE.
- I also attended the Region 10 meeting on August 22nd 2014 in Amsterdam. The meeting was very helpful to understand the issues relevant to Region 10. I attended the Australia Council meeting on the afternoon of August 22nd. I attended many other activities during the next two days related to section leadership, management and other relevant matters.
- I attended several PES Chapter and student branch functions, giving presentations on the benefits of IEEE membership to the attendees.
- We have been doing very well with our sister organisations including Engineers Australia and IET. I attended most of Engineers Australia's Queensland Electrical Branch meetings as the immediate Past Chair of the Electrical Branch and IEEE liaison officer. I will continue to do this in 2015. I have been elected to the Board of the Electrical College of Engineers Australia for 2015.
- I regularly attended teleconference meetings of the IEEE Australia Council in order to coordinate with other Australian sections.
- The Queensland Section's finances are in good condition with substantial savings and a reasonable operating fund.
- A Senior Membership promotion event was organised on October 22nd 2014. Thirty IEEE members attended the BBQ/senior member promotion event. As a result the Queensland section has nominated and submitted 40 applications for promotion to Senior Member grade. Thanks to Daniel Eghbal and Nilesh Modi for arranging this event.
- During 2014 the Queensland Section website was improved significantly. An archive of section doc-

uments, records and history is now available on the website. Thanks to webmaster Mike Robinson.

- After having some issues with the newsletter earlier in the year, we now have an improved template for the newsletter, and the 2014 AGM report is being produced using the same template. Again thanks to Mike Robinson.

Part B - Closing Remarks

It has been a great pleasure to work as the Chair of the IEEE Queensland Section for 2013 and 2014. My expectations have always been very high for section volunteers and most of them have worked beyond my expectations with few exceptions.

I have nominated myself for the Australia Council Chair position for 2015, if elected I will work with other Australian Sections to promote IEEE.

I would like to express my sincere gratitude to all committee members for their help and collaboration. However, I would like to mention a few names for their generous support throughout the year. They are: Mr Mike Robinson (in a number of roles), Dr Daniel Eghbal (Vice Chair), Dr Richard Yan (Treasurer), Dr Rahul Sharma (Secretary), and A/Prof Vaughan Clarkson. Without their support my task would have been more difficult.

Thanks to our nominating committees who looked after the election process of the Queensland Section and chapters. All of your help is much appreciated.

Special thanks to a non-IEEE member, my administrative staff Ms. Maureen Shields for her continued administrative support to our section activities.

I would like to take this opportunity to wish all our members and their families Merry Christmas and a happy time for the festive season. I look forward to continuing to serve the members in our section in my role as the immediate Past Chair in 2015.



Figure 1: Official delegates of Section Congress (Queensland Section Chair: 4th row, 4th from the left)



Figure 2: Official delegates of Australia and New Zealand Council Members attending SC-2014 (Queensland Section Chair: front row, 2nd from the right)

Section Vice-chair's report



DR. DANIEL (MEHDI) EGHBAL
m.eghbal@uq.edu.au

The Year in Review

2014 was my first year as vice-chair. My main role was to coordinate the call for nominations for 2015 officers as well as the Annual General Meeting and dinner.

I am pleased to announce that almost all executive committee and chapter positions are filled, and I have to thank all the nominating committee chairs and members for their help in achieving this result. The 2015 committee members are a group of experienced and dedicated IEEE volunteers, augmented by several new faces. The list of 2015 officers and the vacant positions will be announced during the Annual General Meeting on December 3rd.

Based on the feedback from previous AGMs, we decided to remain at the University of Queensland's St Lucia Campus for this year's event. I hope you enjoy the 2014 Annual General Meeting and dinner and the networking opportunities they provide.

In 2014, the Queensland Section launched its inaugural Senior Membership Elevation BBQ event where 30 IEEE members and senior members attended. The aim of the event was to encourage and assist eligible members to elevate their membership to senior grade. To date the section has nominated 37 applications of which 4 applications have been approved, with 3 additional applications in the pipeline.

Assuming all the applications are approved, the number of senior members in the section will increase from approximately 80 to over 120, a 50% improvement in a single year. Over 10% of the section's membership will be senior members, but I believe the figure could be much higher if all eligible members were to apply for senior membership.

I encourage eligible members to consider upgrading to senior membership grade. You will find more details [here](#) on the section's website, as well as by attending IEEE events that provide you with a great opportunity to meet IEEE volunteers and senior members.

Last but not least, I would like to thank all IEEE volunteers and members whom I had the pleasure to work with in 2014. I wish everyone a merry Christmas and hope you have happy holidays. Stay safe during the holiday season.

Going Forward

I enjoyed my term as vice-chair working with a great team of volunteers, and I look forward to meeting you at the AGM and working with the new committee members in 2015. As highlighted in the section chair's report, the Queensland Section has been very active with some outstanding chapters. Going forward, with a great team I believe we can improve our performance and increase engagement with our members.

Secretary's report



DR. RAHUL SHARMA
rahul.sharma@uq.edu.au

In the role of Secretary, my responsibilities were to prepare the documents associated with the organisation, running and reporting of the monthly Section meetings, help the Section Chair Professor Saha as needed and perform miscellaneous activities such as new officer reporting.

I also participated in judging the winner for the IEEE student thesis competition. All the nominations were of exceptional quality. I would like to congratulate the entrants and look forward to their association in IEEE Queensland activities in future.

There were 10 committee meetings held in 2014. The meetings were held at The University of Queensland in Brisbane; however members also had the option to attend remotely via Skype conference call.

The following table lists the attendance records of the executive committee members for the meetings held.

Office	Office holder	Present	Apology	Absent
Section Chair	Tapan Saha	10		
Vice-chair	Daniel Eghbal	9	1	
Secretary	Rahul Sharma	6	4	
Treasurer	Ruifeng (Richard) Yan	10		
Immediate Past Chair	Abbas Bigdeli	1	8	1
Newsletter Editor	Michael Swinton	5		5
Webmaster	Mike Robinson	9	1	
Professional Activities	Olav Krause (June)	1	4	1
Membership Development Chair	Nilesh Modi	7	3	
Awards and Recognition	Mike Robinson	9	1	
Student Activities Chair	Jack Gaynor	4	5	1
Educational Activities Chair	Hugo Espinosa (Sept)	1	2	1
Engineers Australia Liaison	Tapan Saha	10		
TISP	Mike Robinson	9	1	
Aerospace and Electronic Systems Society Chair	Steve Ashfield	1	2	7
Aerospace and Electronic Systems Society Vice-chair	John Davies			10
Aerospace and Electronic Systems Society Secretary	Robert Kennedy	3	6	1
Computational Intelligence Society Chair	Andrew Lewis	5	4	1
Computer Society Chair	Brian Lovell			10
Computer Society Vice-chair	Andrew West	1		9
Computer Society Secretary	Mike Robinson	9	1	
Control Systems/Robotics and Automation Chair	Michael Kearney	3	7	
Control Systems/Robotics and Automation Vice-chair	John Billingsley	10		
Control Systems/Robotics and Automation Secretary	Frederic Maire (April)	4	4	
Engineering in Medicine and Biology Society Chair	Steve Wilson	6	4	
Engineering in Medicine and Biology Society Vice-chair	Mohan Karunanithi		1	9

Office	Office holder	Present	Apology	Absent
Engineering in Medicine and Biology Society Secretary	Qing Zhang			10
MTT/AP Societies Chair	Konstanty Bialkowski	9	1	
MTT/AP Societies Vice-chair	Greg Hislop	7	3	
MTT/AP Societies Secretary	Morteza Shahpari	5	2	3
PE/DEI Societies Chair	Chandima Ekanayake	8	2	
PE/DEI Societies Vice-chair	Yateendra Mishra	7	2	1
PE/DEI Societies Secretary	Jose Lopez Roldan	1	3	6
PE/DEI Societies Student representative	Medhi Mosadeghy	7	2	1
Signal Processing/Communications Societies Chair	Garry Einicke (March)	7	2	
Signal Processing/Communications Societies Vice-chair	Vaughan Clarkson	7	3	
Signal Processing/Communications Societies Secretary	Dharmika Jayalath			10
Women in Engineering Chair	Alexandra Price	5	5	
Women in Engineering Vice-chair	Angela Tuffley	2	6	2
Women in Engineering Secretary	Mary Tom	5	4	1
Young Professionals Program Chair	Alexandra Price	5	5	
Young Professionals Program Vice-chair	Prachi Redey	3	7	
Young Professionals Program Secretary	Matthew Zillman		6	4
Student Counsellor CQU - Brisbane	Mary Tom	5	4	1
Student Counsellor CQU - Rockhampton	Edward Palmer (July)	2	3	
Student Counsellor GU - Gold Coast	Jahangir Hossain (March)	5	4	
Student Counsellor GU - Nathan	Sascha Stegen	5	2	3
Student Counsellor QUT	Seyit Camtepe (June)			6
Student Counsellor UQ	Vaughan Clarkson	7	3	
Student Counsellor USQ	Paul Wen (March)			9
UQ Student Branch Chair	Jack McKinnon	4	4	2

Treasurer's report



RICHARD (RUIFENG) YAN
ruifeng@itee.uq.edu.au

Comments on the 2014 accounts

- **Overall:**

There is almost no change in the Term Deposit accounts except for an additional \$400 accrued interest. The Access chequeing account had an opening balance of \$7,808.08 on December 1st 2013, and a closing balance of \$21,434.50 on November 26th 2014. Uncashed cheques total approximately \$2,000. Anticipated expenses total approximately \$5,000 (\$2,500 for the 2014 AGM and \$2,500 for ANZSCON 2014). The balance of the Access chequeing account after these adjustments would be approximately \$14,500.

- **Expenses:**

Total expenses for 2013 were approximately \$21,400; expenses for 2014 are approximately \$15,500 (excluding ANZSCON 2014), a significant decrease. The main expense items were:
Technical activities (approximately \$7,500);
Awards and prizes (\$3,000);
AGM 2013 expenses (\$2,600);
Sundry expenses (\$1,900).

- **Income (approximate):**

ANZSCON 2014 - \$15,500 (expenses: almost equal);
PES/DEIS Chapter - \$12,300 (expenses: \$1,530 and awards \$4,030);
IEEE rebates - \$8,800;
Interest earned - \$1,600;
MTT/AP Chapter - \$1,300 (expenses: \$1,460).

- **Concerns:**

The section made a profit in 2014, but this is rare. Next year the section will celebrate 30 years in Queensland. More income is required for that event.

2014 FINANCIAL REPORT

PERIOD: 1ST DECEMBER 2013 - 30TH NOVEMBER 2014

PREPARED BY RUIFENG YAN, TREASURER 2013 - 2014

INCOME		EXPENSES	
IEEE Rebates		Travel	
Annual Rebate 2014 (USD 8,150.49)	8,807.15	Chandima Ekanayake R10 Congress	167.31
Student branch rebate 2013 (USD 98.00)	101.74	Administration	
MTT/AP Chapter annual funding 2014	628.60	Meeting catering expenses	1,040.47
APS Annual support 2014	499.51	Engineers Australia dinner	
MTT/AP Bonus 2013	178.32	Sponsorship	500.00
R10 YPP Indian Congress rebate 2013	227.89	Attendance	235.00
PES/DEIS Rebate and award	1,386.86	Student thesis prizes	
PES/DEIS Share of profits	7,064.75	Thesis prizes (2013)	1,000.00
PES/DEIS Member Driven Initiatives	3,004.95	Postgraduate awards	
PES/DEIS High Performing Chapter	595.00	Nahid Al Masood - Travel prize	1,000.00
PES/DEIS Large Chapter runner up	235.00	Junhyuck Seo - Travel prize	1,000.00
2014 AGM dinner payments	760.00	2013 AGM	
Interest (MECU)		St Leo's College dinner	2,499.50
Transferred to Access Account	687.69	St Leo's dinner refund	40.00
Reinvested in Term Deposits	1,866.10	Engraving and guest speaker gift	95.90
ANZSCON 2014		Student drives	1,627.37
Sponsorship and support	13,500.00	ANZSCON 2014	
Registration receipts	1,947.00	Poster competition	1,000.00
Sundry income		Accommodation, catering and printing	10,030.78
QLD Section event	200.00	Rebate	989.24
		Cheque book fees (MECU)	22.50
		Queensland Section expenses	
		IEEE Day	136.00
		Aemo Control Room visit	440.00
		Senior Membership drive BBQ	412.50
		Chapters & Affinity Groups	
		CIS	356.16
		CSS/RAS	983.28
		MTT/AP	1,053.80
		PES/DEIS	893.78
		YPP	38.95
Income	41,690.56	Expenses	26,198.04
Accrued Income (Accounts Receivable)		Accrued Expenses (Accounts Payable)	
		2014 AGM dinner estimate	2,500.00
		SP/CS Distinguished Lecturers	836.71
		MTT/AP Distinguished Lecturer	410.00
		2014 Thesis prize	1,000.00
	0.00		4,746.71
Total Income	41,690.56	Total Expenses	30,944.75

2014 FINANCIAL REPORT

Assets as at November 26th 2014	
MECU Accounts	
Access Account	21,434.50
Term Deposit 138322014 @ 4.0% matures July 17th 2015	24,536.56
Term Deposit 307188228 @ 3.5% matures September 13th 2015	23,923.16
Term Deposit 307188229 @ 3.3% matures January 13th 2015	20,000.00
Total cash at bank	89,894.22
Accrued income	
Total assets	89,894.22
Liabilities	
Accrued expenses	4,746.71
Total liabilities	4,746.71
Net worth	85,147.51
AESS	AEROSPACE AND ELECTRONIC SYSTEMS SOCIETY
CIS	COMPUTATIONAL INTELLIGENCE SOCIETY
CS	COMPUTER SOCIETY
CSS/RAS	CONTROL SYSTEMS/ROBOTICS AND AUTOMATION SOCIETIES
EMBS	ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY
MTT/AP	MICROWAVE THEORY AND TECHNIQUES/ANTENNAS AND PROPAGATION SOCIETIES
PES/DEIS	POWER AND ENERGY/DIELECTRICS AND ELECTRICAL INSULATION SOCIETIES
SP/CS	SIGNAL PROCESSING AND COMMUNICATIONS SOCIETIES
WIE	WOMEN IN ENGINEERING
YPP	YOUNG PROFESSIONALS PROGRAM

Acting Newsletter editor's report



MIKE ROBINSON
blackmagic@computer.org

There have been three newsletters produced so far in 2014, with a fourth due out immediately following the Annual General Meeting on December 3rd.

The newsletter editorship has been vacant since mid-2014, when the previous editor found he couldn't continue in the position for personal reasons. That was a great pity because he did a sterling job on his one and only newsletter.

I took on the role in a temporary capacity in August 2014. It was a baptism of fire requiring lots of late nights as I came to grips with the typesetting system used to produce the newsletter, \LaTeX , pronounced lay-tech. \LaTeX is very sophisticated but it is also very dense, even impenetrable at times. There is no single correct way to do things in \LaTeX ; instead there are many ways to do the same thing in \LaTeX . Finding the way that works best in a given set of circumstances is a matter of endless experimentation, often accompanied by deep frustration.

I have made several changes to the newsletter over the last few months. One change was to introduce photographs of contributors at the top of each article.

Another change was to invite contributions from people other than section committee members. I hope you have enjoyed seeing a brighter newsletter; I've certainly enjoyed producing it.

This year the Annual General Meeting report is being produced on the \LaTeX system for the first time. This will provide a much more attractive AGM report than we have been accustomed to in the Queensland Section. AGM reports are sent to Region 10 each year for inclusion in the region's archives, and they are stored in the section's website [archives](#). The new format will give future archivists of the section's provenance a more rewarding experience than was previously the case when they trawl through the AGM reports looking for historical information.

Shortly I will be handing over to the incoming newsletter editor for 2015. Before I do so I would like to thank all of you who helped me in any way while attending to my tasks. It has been a pleasure to produce the section's newsletter for the last few months, and I have been amply rewarded by your kind words and thoughts.

Mike Robinson

Webmaster's report



MIKE ROBINSON
blackmagic@computer.org

2014 has been a year of change, some of it gradual and some not so gradual.

When I took on the webmaster role earlier in the year I compiled a report for the section newsletter, detailing the history of website development in the section. I noted that there had been three separate periods of development, which I labelled [Phase 1](#), [Phase 2](#) and [Phase 3](#). If you are reading an electronic version of this report you can click on the links and see how each phase differed from the others.

Phase 3, where we were in early 2014, wasn't very attractive to look at so I determined to brighten it up a little. I say 'a little' because there was a limit to what could be done to improve it.

I changed the background colour to make the web pages easier to read, and I added a lot of extra pages, mainly for archiving section history. The underlying software system that produced the web pages couldn't be altered at all, so I decide the section would be better served by a more modern website, complete with all the trappings one finds in today's web world.

It has been some time since I did active web development, and much has changed in that time. There were no smart phones or tablets a few years ago, and now they are ubiquitous. The web has changed to accommodate these new devices, and the process of accommodation is known as '[responsive web design](#)'. HTML5 and CSS3 are also driving the new web, though some browsers are better than others in the degree to which they have adopted each of these standards.

Clearly I was jumping into a void when I convinced the section committee that it was time to move to Phase 4. The void got deeper when I discovered the tight restrictions the IEEE places on websites that carry its

brand. To ease the load the IEEE offers packaged websites that require very little skill to deploy. I experimented with the packaged solutions but found them extremely inflexible, not unlike Phase 3 except that they look a lot better.

The IEEE allows experienced web developers to create custom websites so long as certain rules are observed. I studied the rules and came up with [this](#), which we can safely call Phase 4 because it looks a whole lot different from the earlier phases.

At the moment Phase 4 is a hybrid website. If you open the drop-down menu and click on a sub-menu you will be taken back - not unlike the TARDIS - to the Phase 3 website. The reason for this is that it will take several months to convert the old web pages to a more modern, mobile device-ready format. I estimate I added at least 100 new web pages to the Phase 3 website. Converting them and recapturing all the history that is stored in them will take a little time.

But the section is moving in the right direction with Phase 4. It looks better and it behaves better, though it is not yet fully smart-phone responsive. I'll apply that technique a little further down the track. Meantime I'm working on a homogeneous approach: all the pages will look similar in layout though the contents are different. This modular approach will ease future maintenance issues, for me and for those who succeed me as webmaster.

In Phase 4 each chapter will have its own home page, not dissimilar from the main section page, except that each home page will have a different colour and it will display the parent society's logo. Click on the logo and the parent society's website will open.

Enjoy!

Awards and Recognition report



MIKE ROBINSON
blackmagic@computer.org

For 2014 the Awards and Recognition committee has retained the award structure used in previous years. This encompasses three award categories for section volunteers.

Additionally there are two award categories for student members. While the student awards are not administered by the Awards and Recognition committee they are mentioned here for completeness.

The first volunteer award category is Recognition of Service awards. These are an official recognition of a person's contribution in a particular role and are awarded at the first AGM following the completion of a person's term in a role. These awards do not require a nomination.

The second volunteer award category is Outstanding Contribution awards, given to people who have been identified as having made a significant contribution during their term in a role. They are awarded at the first AGM following the completion of a person's term in a role. These awards require a seconded nomination from members of the IEEE Queensland Section, along with a reason for the nomination, to be submitted to the section committee.

The third volunteer award category is the Volunteer of the Year award. This is awarded to the person who is regarded as having made the most substantial contribution during their time in office. Only people who have completed their term of office are eligible. A single plaque is awarded each year. Nominations from members of the IEEE Queensland Section are submitted to the section committee for final selection of Volunteer of the Year.

Recognition of Service awards

A total of 9 Recognition of Service awards were presented within the IEEE Queensland Section in 2013.

Recipient	Role
Nilesh Modi	Webmaster
Chandima Ekanayake	Membership Development
Mike Robinson	Computer Society Chapter Chair
John Billingsley	Control Systems/Robotics & Automation Societies Chapter Chair
Mehdi (Daniel) Eghbal	Power and Energy Society Chapter Chair
Chandima Ekanayake	Power and Energy Society Chapter Vice-chair
Nilesh Modi	Power and Energy Chapter Secretary
Vaughan Clarkson	Signal Processing and Communications Societies Chapter Chair

Outstanding Contribution awards

Three Outstanding Contribution awards were awarded within the Queensland Section in 2013.

Recipient	Role
Vaughan Clarkson	Signal Processing and Communications Societies Chapter Chair
Mehdi (Daniel) Eghbal	Power and Energy Society Chapter Chair
Mike Robinson	Section Vice-chair

Volunteer of the Year award

A vote was taken by members of the IEEE Queensland Section committee and Mike Robinson was elected Volunteer of the Year for 2013.

Thesis Prize awards

There were two categories of award for undergraduate theses in 2014.

- The IEEE Queensland Section Student Prize for the Best Final Year Thesis in all fields of Electrical Engineering and Information Technology was awarded to Samuel Hinton from The University of Queensland for his thesis entitled 'Automatic and Assisted Redshift Analysis of Astronomical Objects'.
- The ICPADM-Mat Darveniza IEEE Student Prize for the Best Final Year Thesis in Power Engineering was awarded to Sebastian Forsyth from The University of Queensland for his thesis entitled 'Optimization of Wind Power Investment in the Australian National Electricity Market'.

PES Travel Prize awards

The IEEE Queensland Power and Energy Society Chapter Student Conference Travel Prize was awarded to two recipients in 2014.

- Nahid Masood from The University of Queensland for presenting the paper entitled 'A New Trading Framework for Demand Response Aggregators' during the IEEE PES 2014 General Meeting, in Washington DC, USA.
- Junhyuck Seo from The University of Queensland for presenting the paper entitled 'Differential Partial Discharge Extraction Technique for Online Power Transformer Insulation Assessment' during the IEEE PES 2014 General Meeting, in Washington DC, USA.

Aerospace and Electronic Systems Society Chapter

**STEVE ASHFIELD**

steve.ashfield@NovaSystems.com

Committee:

Chair: Steve Ashfield

Vice-chair: John Davies

Secretary: Robert Kennedy

IEEE Workshop on Asia-Pacific Satellite Navigation and Positioning

Our research teams have an interest in automating vehicles and processes within the mining and allied transport industries in the pursuit of improving productivity and safety and reducing energy/carbon costs.

Conventional GPS-Glonass satellite navigation technologies exhibit performance shortcomings that limit opportunities for automation. That is, poor satellite navigation performance within canyons, in proximity to buildings, hills, foliage and other obstructions hinders the development of technologies for industry productivity improvement.

A recently deployed Chinese satellite navigation constellation, known variously as Compass, Beidou, or BeiDou Satellites (BDS), that covers the Asia-Pacific region including Australia, will deliver improved performance and support advances in automation.

It is desired to establish collaborative linkages with Australian and Chinese Global Navigation Satellite

System (GNSS) researchers in order to access emerging satellite receiver technology and leverage projects in the R&D automation space.

The IEEE Workshop on Asia-Pacific Satellite Navigation and Positioning was organised by Garry Einicke (CSIRO), Professor Yanming Feng (QUT), Matt Higgins (Qld Govt) and Professor Qile Zhao (Wuhan University).

The Workshop served as a first step in establishing the desired collaborative linkages. It included 30 lectures that were presented during February 27th - 28th 2014 at the Queensland Centre for Advanced Technologies.

The Workshop was indeed successful. The main strengths and weaknesses of emerging satellite navigation technologies have been identified and links between researchers have been made.

Computational Intelligence Society Chapter



DR. ANDREW LEWIS
a.lewis@griffith.edu.au

The Computational Intelligence Society chapter started the year with a three-day Summer School on Computational Intelligence and Information Technologies. Held at Griffith University Gold Coast campus on February 19th - 21st, there were 40 registered participants, including postgraduate students, academic and local industry representatives.

The following speakers - from a number of universities, CSIRO and industry - gave presentations, discussion sessions and networking opportunities:

- Professor Jong Hwan Kim, IEEE Fellow, Korean Advanced Institute of Science and Technology
- Professor Michael Blumenstein, School of ICT, Griffith University
- Associate Professor Alan Liew, School of ICT, Griffith University
- Dr. Paulo Borges, CSIRO
- Dr. Farid Kendoul, CSIRO
- Dr. Jun Jo, School of ICT, Griffith University
- Dr. Clarence Tan, Ambassador, Singularity University, NASA Ames Research Center, USA.
- Mr. Bruce Satchwell, CEO, Alive Technologies

The summer school received unanimously positive feedback, and attracted [on-line media interest](#).

This event was followed by two Distinguished Lecturer seminars presented by Professor James Bezdek in

May. Jim enthralled audiences of between 20 and 40 students, academics and industry participants with detailed but highly accessible discussions of Visual Cluster Analysis and Clustering in Big Data.

A Life Fellow of IEEE, Jim is well-known for developing the fuzzy c-means (FCM) algorithm, considered as one of the most important discoveries in fuzzy pattern recognition, and the clustering algorithm of choice for most practitioners in fuzzy exploratory data analysis.

Many PhD students turned up for the talks, and confirmed afterwards that they found the talks very informative, the speaker's delivery very captivating, and the content very useful in their own research.

Thanks must go to those instrumental in organising and running these events, in particular Dr Jun Jo and Associate Professor Alan Liew.

In July the Chapter Chair attended the World Congress on Computational Intelligence (WCCI 2014) in Beijing, and was fortunate to attend an international meeting of Chapter Chairs, including quite a number from Region 10. A real feeling of cooperation began to develop, and the Chair of the UKRI Chapter, this years Outstanding Chapter award winner, has subsequently forwarded information on their award-winning activities. Perhaps we can look to implement some similar initiatives locally.

The year is drawing to a close with an enthusiastic nomination for Vice-chair from a student volunteer. We can expect more activity from the Computational Intelligence Society chapter in the coming year.

Control Systems/Robotics and Automation Societies Chapter



DR. MICHAEL KEARNEY
m.kearney@uq.edu.au

Committee:

Chair: Dr. Michael Kearney (The University of Queensland)

Vice-chair: Professor John Billingsley (University of Southern Queensland)

Secretary: Dr. Frederic Maire (Queensland University of Technology)

The Control Systems/Robotics and Automation Societies joint chapter had a number of events in 2014, including a Distinguished Lecture given by Professor Dragan Nesic on “Observer Design with Applications in Neuroscience”.

We also held a number of technical seminars during the year:

- Associate Professor Debraj Chakraborty: *Time Optimal Feedback Synthesis with Applications*
- Dr Rohan C. Shekhar: *Robust Model Predictive Control with Waysets*
- Dr Eric Kerrigan: *Computers make mistakes and thats OK: Finite Precision Arithmetic for Advanced Real-time Computation*
- Dr Eric Kerrigan: *Throw Yourself at the Ground and Miss: Models for Control and Estimation of*

Distributed Parameter Systems Without the Pain

- Professor Peter Brett: *The Future Touch of Robots in Surgery*

We thank all of our members, particularly those who came along and attended our events, and encourage you to come along to events next year. If any member has any idea for a future technical or other event, please drop me an email.

I would also like to say thanks to Professor John Billingsley, who has been involved with the chapter for many years, and who will be stepping down from the executive next year. I welcome James Brodie to join me on the committee as a vice-chair next year.

I would also like to encourage you to participate in the [Australian Control Conference](#) in 2015, which will be held on the Gold Coast on November 5th - 6th 2015.

Engineering in Medicine and Biology Society Chapter



PROFESSOR STEPHEN WILSON
s.wilson@uq.edu.au

Committee:

Chair: Stephen Wilson (The University of Queensland)

Vice-chair: Mohanraj Karunanithi (CSIRO)

Secretary: Qing Zhang (CSIRO)

EMBS Qld has hosted a number of events this year commencing with the Intensive Care Emergency Therapy (ICET) lab symposium at The Prince Charles Hospital in August.

This was followed by a meeting at Brisbane Entertainment Centre with the purpose of garnering support for biomedical engineering related conferences including bringing EMBC to Brisbane in coming years.

It was a pleasure to welcome Professor Nigel Lovell

from UNSW who is well networked with the IEEE EMBS conference committee. His suggestions were very valuable to us.

Visits by two academics working in fields related to our members' interests were hosted in November and December. Professor Scott Lear from University of British Columbia presented his work on internet-based, virtual rehabilitation after cardiac events. Professor Zahra Moussavi spoke on biosignal analysis in Alzheimer's disease.

Microwave Theory and Techniques/Antennas and Propagation Societies Chapter



DR. KONSTANTY BIALKOWSKI
konstanty@ieee.org

Committee:

Chair: Chair: Konstanty Bialkowski (The University of Queensland)

Vice-chair: Greg Hislop (CSIRO)

Secretary: Morteza Shahpari (Griffith University)

Review of 2014

In 2014 the MTT/AP joint chapter was pleased to host 12 events for the calendar year. This includes 11 seminars and workshops on a wide range of topics relating to the diverse interests of the chapter. The other event was a planning meeting in February which helped with the increased chapter activity for the year.

Based on the chapter's performance in 2013, it was awarded the IEEE Microwave Theory and Techniques Society Outstanding Chapter award. This included a plaque presented at a major annual MTT conference - International Microwave Symposium 2014 - in Tampa, Florida.

Under the IEEE Distinguished Lecturer program operated by each of our parent societies - MTT and APS - we were able to invite some well known researchers to Brisbane and Australia. Due to the considerable distances involved we organised for other chapters in Australia to host the speakers in their sections.

Our first Distinguished Lecturer of the year was Dr Goutam Chattopadhyay from NASA's Jet Propulsion Labs in California. He introduced some very interesting applications of Terahertz technology, including the search for other planetary bodies with water and/or oxygen.

Later in the same month we had our second Distinguished Lecturer - Professor Per-Simon Kildal from Sweden - who talked about both indoor communication system testing in a RIMP chamber and the design of antennas for space telescopes and satellite communications.

The last Distinguished Lecturer for the year was Dr Brian Kent, an aerospace consultant who previously was the CTO of the US Airforce Research Laboratory.

Dr Kent discussed the design and running of the NASA Debris Radar system which was developed as a result of the Columbia space disaster. Space shuttle flight became safer through the use of the NDR system.

Some other highlights of 2014 were the seminars and workshops in topic areas of optics, photonics and terahertz, medical applications of microwaves and antennas, theoretical and computational electro-magnetics, communications, civil and geophysical applications, and antennas.

I would like to thank local companies EM Solutions Pty Ltd and Micreo Ltd for presenting two of the seminars this year. All of the seminars were well received and had good attendances, with a balanced mix of IEEE members and guests.

Lastly, we continued our postgraduate workshop and this time had 7 speakers on various topics relating to antennas and microwave systems.

The Microwave Theory and Techniques/Antennas and Propagation Societies joint chapter committee wishes to thank everyone for supporting our events during the year, and we look forward to seeing you at more events in 2015.

Seminars and Workshops

This year all seminars and workshops were recorded on the MTT/AP [website](#).

- January 28th (The University of Queensland): “Microwave based medical diagnostics and treatment” by Professor Mikael Persson, Chalmers University, Göteborg, Sweden.
- March 7th (The University of Queensland): “Terahertz technology and its Application” by Dr Goutam Chattopadhyay, NASA-Jet Propulsion Laboratory, California Institute of Technology (IEEE MTT Distinguished Lecturer)
- March 17th (Griffith University): “Rethinking the Wireless Channel for OTA testing and Network Optimization by Including User Statistics: RIMP, pure-LOS, Throughput and Detection Probability” by Professor Per-Simon Kildal, Chalmers University, Göteborg, Sweden - IEEE APS Distinguished Lecturer
- March 17th (The University of Queensland): “Some Reflector and Feed Antenna Inventions that made a Difference: Fundamentals and examples from radio telescopes, satellite communications and radio links” by Professor Per-Simon Kildal, Chalmers University, Göteborg, Sweden - IEEE APS Distinguished Lecturer
- March 27th (Engineering House): “Joint meeting of IET Queensland and Engineers Australia

Queensland Division ITEE Branch: High Bandwidth Mobile Communications - Overcoming the Free Space Limitations” by Dr John Ness, EM Solutions

- July 1st (The University of Queensland): IEEE MTT/AP Queensland Workshop, (7 PhD students presented their work in a conference style presentation)
- October 2nd - 3rd (The University of Queensland): “Workshop on Electric and Electromagnetic Measurement Methods”, a 2-day workshop relating to EM methods in civil and geo-environmental applications
- October 7th (Griffith University): “UWB Nano-Antenna Arrays” by Professor Amir Boag, Tel Aviv University, Israel
- October 7th (The University of Queensland): “Recent advances in photonic receivers” by David Enchelmaier, Mireo Ltd
- November 3rd - “Characterization of Space Shuttle Ascent Debris Based on Radar Scattering and Ballistic Properties - Evolution of the NASA Debris Radar System told in two parts” by Dr Brian Kent - Aerospace Consultant (Previously CTO US Airforce Research Lab) - IEEE APS Distinguished Lecturer
- December 12th - “Open source for Microwave Engineering... Why not?” by Dr David Ireland, CSIRO

Conclusion

In closing I would like to thank the 2014 Microwave Theory and Techniques/Antennas and Propagation Societies chapter committee - Greg and Morteza - for their support in running the chapter and keeping it active during the year.

Over the last two years I have enjoyed my term as Chair and hope to remain active in chapter activities in the future.

Power and Energy & Dielectric and Electrical Insulation Societies Chapter



DR. CHANDIMA EKANAYAKE
chandima@itee.uq.edu.au

Committee:

Chair: Dr. Chandima Ekanayake (The University of Queensland)

Vice-chair: Dr. Yateendra Mishra (Queensland University of Technology)

Secretary: Dr. Jose Lopez Roldan (Powerlink)

Highlights of 2014

- PES organised 9 technical events (7 technical seminars, one workshop and 1 panel discussion).
- The PES chapter was recognized as one of the High Performing Chapters under the High Performing Chapters Program in 2013.
- The PES chapter was recognized as a runner-up chapter for the 2013 Outstanding Large Chapter Award. This is the fourth year the PES chapter has won this award.
- PES received funding of US\$2,500 from IEEE under the PES Member Driven Initiative program to organise a series of workshops.
- The PES chapter awarded two student travel prizes for student members to attend and present papers at the 2013 IEEE PES General Meeting conference, held in Washington DC, USA. Mr. Nahid-Al Masood and Mr. Junhyuck Seo from the University of Queensland were the winners of this award. Each winner received a cheque worth \$1,000.
- The PES student branch at the University of Queensland organised 6 events including one social event.
- Professor Gerard Ledwich was recognized as the 2013 IEEE PES Outstanding Engineer for his professional activities and contribution to the power and energy profession.
- Archives of 2010-2014 activities can be accessed from the PES chapter's [website](#).
- A Power and Energy Society - Dielectrics and Electrical Insulation Society joint chapter was formed.
- The PES chapter vice-chair attended the 2014 IEEE Region 10 chapter chairs' meeting.

Seminars and workshops

- Technical Seminar
Title: Partial Discharge Testing and Monitoring of Power System Assets
Date: March 28th 2014
Venue: The University of Queensland, St Lucia
Speaker: Dr. Wojciech Koltunowicz, Senior Research staff from OMICRON gave a presentation on "The challenges in testing and monitoring HV power cables, transformers and rotating machines". In the case of HV power cables, a method that can detect and locate partial discharges (PD) at all accessories simultaneously

during after installation tests and later, during continuous monitoring in service was presented.



Figure 3: Dr. Wojciech Koltunowicz

- Technical Seminar

Title: Industry Practices on Out-of-Step Protection and Grid Islanding Schemes

Date: April 16th 2014

Venue: Powerlink Queensland, Virginia

Speaker: Dr. Ramakrishna (Rama) Gokaraju is an Assistant Professor at the University of Saskatchewan.

In this presentation, Rama spoke about the standard industry practices on out-of-step protection of generators and grid islanding schemes. Rama also discussed some of the modern industry schemes (currently being investigated) using synchrophasor based relaying. The usefulness of real time hardware in the loop summation simulations for analyzing out of step protection was considered.

- Workshop (CPD course)

Title: Electrical Insulation Fundamentals

Date: May 9th 2014

Venue: Engineering House, Engineers Australia

Speakers: Eight distinguished presenters representing Australian industry and academia in the fields of electrical insulation and diagnostics of high voltage equipment were brought together to address this fundamental topic in electrical power engineering

Summary: Electrical insulating materials are the backbone of power transmission and distribution equipment. If the insulation properties of the material degrade and it is not able to withstand the continuous or transient voltage, the equipment

will fail catastrophically.

This seminar reviewed the fundamentals of electrical insulation. It explained the insulating structures found in high voltage equipment such as switchgear, transformers, outdoor insulators and cables.

Common insulation degradation problems such as ageing and partial discharges were described. Standard diagnostic techniques to monitor the state of the insulation in power transmission and distribution equipment were presented by specialists in each type of equipment.

- Technical Seminar

Title: Transformer Fire Safety Practices

Date: May 22nd 2014

Venue: Engineering House, Engineers Australia

Speaker: Arne Petersen is a consulting engineer, specialising in transformer technology. He has 27 years experience as transformer specialist and manager of HV Plant for Powerlink, Queensland.

Summary: The risk of a transformer causing a fire is low, but not negligible and the consequences can be very severe if it does occur. The issue of transformer fire safety is therefore of major concern for utilities and other transformer users. It was for this reason Cigre formed an international working group comprising technical specialists from major utilities and transformer manufacturers to study the topic and write a guide document for Transformer Fire Safety. This guide document was published in June 2013 as Cigres Technical Brochure No. 537 - Guide to Transformer Fire Safety Practices. It is Cigres and also Arne's (presenter's) view that the availability and content of this guide should become known to as many designers and users of transformers as possible. For this reason he has made Tutorial presentations based on content of the guide at Cigre Colloquium in Zurich Sept. 2013, Asia Pacific TechCon Sydney 2014, and has accepted the invitation to also conduct this tutorial presentation on the topic of transformer fire safety. The content of his Tutorial Presentation covered: Fire physics and typical transformer fire scenarios The probability of a transformer fire and how to determine the probability and risk

applicable for your specific transformer installations Internal arcing and tank ruptures the probability, causes and mitigation measures available. Fire risk and performance analysis briefly - what and how Fire risk mitigation options for transformers Transformer fire damage control practices. The importance of planning for a fire event.



Figure 4: Arne Petersen

- Technical Seminar Title: Microgrid Modeling and Research at the University of Texas at Austin, Center for Electromechanics
Date: June 25th 2014
Venue: The University of Queensland
Speaker: Dr. Clay S. Hearn, a Research Engineer at the Center for Electromechanics at the University of Texas at Austin. Summary: The Center for Electromechanics (CEM) at the University of Texas at Austin is an active participant in the university's efforts to develop advanced modeling and control algorithms for islanded microgrids. Facilities at CEM are available to setup MW level power grids with voltages up to 1.2 kV in a laboratory setting for control demonstration and modeling validation. In addition to on-site facilities, CEM collaborates with local utilities and organizations like the Pecan Street project for real world data collection of grid energy use and renewable energy generation. This data allows researchers at CEM to investigate grid stability due to increase load variability with renewable

sources and identify areas where energy storage can be implemented through computer simulation. This presentation covered the current work at CEM in the areas of microgrid research. In addition to testing and simulation capabilities, the presentation discussed work on energy storage sizing for microgrids and identification of stability margins based on line loss, ramp rates, and grid inertia.



Figure 5: Dr. Clay Hearn

- Technical Seminar
Title: Distribution level FACTS devices for improved load capability and solar integration
Date: August 26th 2014
Venue: The Engineering House, Engineers Australia
Speaker: Professor Peter Wolfs is the Deputy Dean Research for the School of Engineering and Technology and the Director of the Power and Energy Center at Central Queensland University. Summary: Flexible AC Transmission or FACTS devices, such as static compensators (STATCOMs) and Unified Power Flow Controllers (UPFCs) can be directly applied in the low voltage distribution system to regulate the network voltages while simultaneously balancing the network currents. This will allow a given distribution network to accommodate higher levels of distributed photovoltaic generation and, in many voltage limited cases, increase the capacity of the network to carry conventional loads. This pre-

sensation will examine some recent advances in the application of silicon carbide to LV distribution level applications, progress in reducing the need for large DC bus capacitors, opportunities to host integrated storage and methods to best allocate limited FACTS device capacity in an LV network.

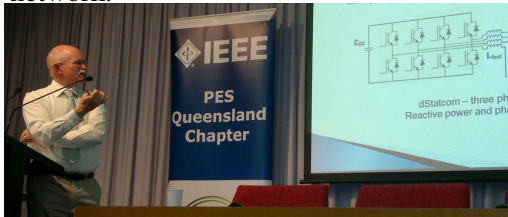


Figure 6: Professor Peter Wolfs

- Technical Seminar Title:** Requirements Engineering in Smart Grids and current direction of R&D for energy transition in Germany
Date: September 11th 2014
Venue: The University of Queensland
Speakers: Professor Sebastian Lehnhoff of University of Oldenburg, Germany and Professor Christian Rehtanz of TU Dortmund University, Germany
Summary: This presentation gave an overview of smart grid and current R&D in German Energy transition (Energiewende). Professor Sebastian discussed how ICT requirements engineering supports roll-out of new services and the development of the Smart Grid. Professor Christian presented the current state of the Energiewende and where still more work is needed? A snapshot of current R&D initiatives in the German Power Systems community was also presented.



Figure 7: Professor Sebastian Lehnhoff



Figure 8: Professor Christian Rehtanz

• Panel Discussion

Title: NEM - Current trends and future uncertainties

Date: October 23rd 2014

Venue: Engineering house, Upper Edward Street, Brisbane

Panel Members: Blake Harvey: ERGON - Manager Network Strategy & Policy is Queensland President of Engineers Australia.

Thomas Dargue: is the Acting Manager of Supply Forecasting with the Australian Energy Market Operator.

Shantha Ranatunga: is currently attached to the AEMO Systems Capability group as a Market specialist.

Dr Joel Gilmore: is a Senior Manager at EY, where he provides advice to industry and government on transitioning Australia to a low emissions future.

The facilitator of this discussion was Professor Tapan Saha from the University of Queensland.

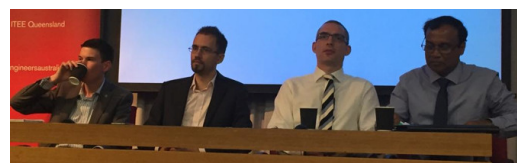


Figure 9: Panel group

Summary: Recent years have seen a consistent and unprecedented reduction in demand for electrical energy, not just in Australia but in most developed countries. As this decline in demand was largely unforeseen, it has resulted in a large surplus in generation capacity.

The panel members discussed the uncertainty of

RET, over-supply of electricity generation, energy efficiency, increase in roof-top PV penetration and its impact on wholesale energy market, and optional firm access.

- Workshop

Title: IEEE workshop on distribution network management

Date: November 24th 2014

Venue: Energex, Newstead

Speakers: Graeme McClure - Principal Engineer Protection, Control and Automation; AusNet Services

Professor Tapan Saha - Leader PES research group, The University of Queensland

Summary: The workshop covered two presentations. Graeme McClure presented an overview of Ausnet Services projects to improve efficiency and management of low voltage distribution networks. These projects included AusNets Services self-healing network, integrated Volt/Var strategy, closed loop voltage regulation, integrating embedded generation and storage, and enhanced distribution network control. AusNet Services self-healing network has been in service for seven years and has changed several aspects

of operating the network. Distributed generation at AusNet Services ranges from wind farms to domestic solar. Many mid-size embedded generators produce power from tip gas and water transfer. Integrated Volt Var control (IVVC) and embedded energy storage are seen as key technologies for the future.

The second presentation from the power system research group at the University of Queensland gave a presentation on research outcomes from UQs 1.2MW solar roof-top PV plant at St Lucia campus and the under-construction 3MW solar plant at Gatton Campus.



Figure 10: Graeme McClure

2014 Awards

Student travel awards

The IEEE Qld Section PES Chapter awarded two Student Conference Travel Prizes each worth \$1,000. The PES chapter received 15 applications in 2014 from students of Queensland universities to attend and present papers at the 2014 IEEE PES General Meeting in Washington, DC, USA.

Mr. Nahid-Al Masood and Mr Junhyuck Seo were the winners. They will each receive a certificate from the IEEE Queensland section during the section's Annual General Meeting in December 2014.

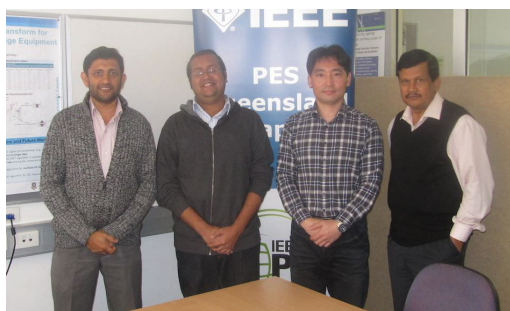


Figure 11: Student travel prize award winners Nahid (2nd from left) and Jun (3rd from left) with PES chair Dr. Chandima Ekanayake (left) and Section Chair Professor Tapan Saha (right)

Outstanding Engineer Award

The IEEE PES Queensland chapter launched the 'Outstanding Engineer Award' in 2010.

In 2013 Professor Gerard Ledwich, Professor of Electrical Engineering at the Queensland University of Technology, was recognized as the outstanding engineer and the plaque "IEEE Power and Energy Society of Queensland Outstanding Engineer Award" was presented to him during the IEEE microgrid modelling seminar on June 25th 2014 by the former Chair IEEE PES Queensland chapter Dr. Daniel Egbahl.



Figure 12: Dr. Daniel Eghbal presents the award to Professor Gerard Ledwich

Announcement of PES Outstanding Engineering Award 2014

The IEEE QLD PES chapter established the 'Outstanding Engineer' award' in 2010, which is aimed to recognize outstanding technical, professional and society contribution on behalf of the power and energy profession. This award has been given each year starting from 2010. A special plaque for the "IEEE Power and Energy Society of Queensland Outstanding Engineer Award" is presented to the recipient by the chair of the IEEE Queensland PES chapter.

IEEE PES/DEIS is now calling for nominations for the Outstanding Engineer Award 2014. The award rules and nomination forms can be downloaded from links below. The deadline for nomination submissions is 17th December 2014. Related links:

[Award Rules](#)

[Nomination form](#)

[Image of the award Plaque](#)

The nomination form must be submitted electronically to the PES Chapter Chair (chandima@ieee.org) no later than December 17th 2014.

Eligibility Criteria:

- Outstanding technical contributions to the power engineering profession.
 - Outstanding professional and leadership contributions to the power engineering profession
 - Significant contributions to the local community representing the power engineering profession.
 - Outstanding contributions in the area of power engineering education.
- Service to the Power Engineering Society and/or IEEE.
 - PES and/or IEEE membership.

Previous PES Outstanding Engineer Award recipients:

- 2010 Dr. Jose Lopez-Roldan
- 2011 Dr. Dave Allan
- 2012 Professor Tapan Kumar Saha
- 2013 Professor Gerard Ledwich

Signal Processing and Communication Societies

Chapter



DR. GARRY EINICKE
Garry.Einicke@csiro.au

Committee:

Chair: Dr. Garry Einicke (CSIRO)

Vice-chair: Dr. Vaughan Clarkson (The University of Queensland)

Secretary: Dr. Dhammika Jayalath (Queensland University of Technology)

Journal Paper Club Meetings

The Journal Paper Club meetings - which are organised by Vaughan Clarkson - have continued throughout 2014. In these meetings the participants discuss a highly cited, 'top ten' or major-prize-winning article in a Signal Processing Society or Communications Society journal. In this way it is hoped that we all broaden our understanding of the field.

These meetings also serve as an informal network in which researchers from local universities, industry and government agencies are able to meet over a beer and share information about recent developments.

On May 1st Professor Andrew Bradley led discussion on a paper by Greg Berchin: "[Precise Filter Design](#)", IEEE Signal Processing Magazine, Volume 24, No. 1, pp. 137 - 139, January 2007.

On June 3rd Andrew Smith discussed a tutorial on [particle filters](#): "A tutorial on particle filters for on-line nonlinear/non-Gaussian Bayesian tracking", IEEE Transactions, Signal Processing Society, Volume 50, No. 2, pp. 174 - 188, February 2002, which is the #1 most downloaded paper for its journal over the last decade.

On September 23rd Garry Einicke discussed the [classic paper](#) by L. Rabiner: "A tutorial on hidden Markov models and selected applications in speech recognition", Proceedings of the IEEE, Volume 77, Issue 2, pp. 257 - 286, 1989.

A special IEEE Day meeting took place on October 7th, during which Professor Andrew Bradley addressed a paper that's a little more general-interest than the signal processing and communications papers that we usually read. He discussed Amanda H. Goodall's [paper](#): "Should top universities be led by top researchers and are they?", Journal of Documentation, Volume 62, No. 3, pp. 388 - 411, 2006.

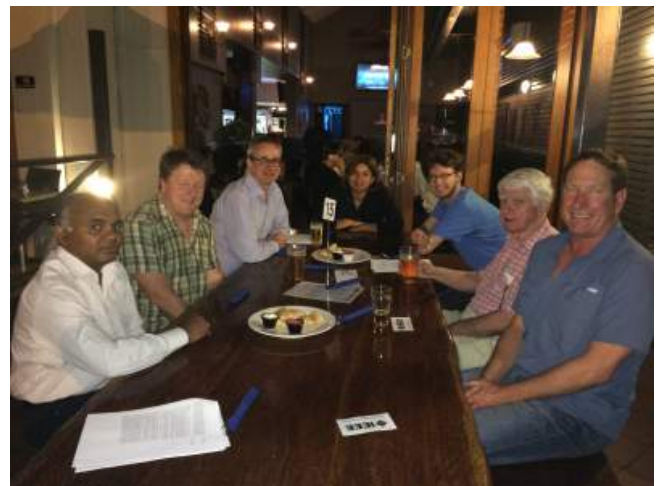


Figure 13: L to R: Kalum Udage, Vaughan Clarkson, Andrew Bradley, Kimberley Nunes, Sam Hames, Mike Robinson, Garry Einicke. Photo: Dhammika Jayalath.

On November 3rd Kristian Weegink led discussion on a [paper](#) by Christian L. Althaus: "Estimating the reproduction number of Ebola virus (EBOV) during the 2014 outbreak in West Africa" (PLOS Currents Outbreaks, September 2, Edition 1, 2014).

Distinguished Lecturer visits

Professor V. John Mathews (University of Utah) visited Townsville and Brisbane on October 22nd and 24th 2014. He provided seminars on “Signal Processing for Structural Health Monitoring” which were well-attended. Discussions about dynamic measurement techniques followed in Professor Martin Veigt’s laboratory. Spontaneous enthusiasm was in abundance when observed phenomena were not yet understood.

The Signal Processing and Communications team concluded with a pre-G20 dinner in the Brisbane Convention and Exhibition Centre precinct and Professor Mathews promised to return in 2015.



Figure 14: Professor V. John Mathews

Professor Anura Jayasumana, from the Department of Electrical and Computer Engineering, Colorado State University, delivered a talk in Brisbane on November 3rd 2014. Professor Aruna is a Distinguished Lecturer for the IEEE Communications Society. The title of the talk was “Network Aware Nodes: A Novel Self-Organization Approach for the Internet of Things” and was delivered at Queensland University of Technology. It was attended by a mix of academic staff, students and industry representatives.

Professor Aruna started with a broad insight into the concept of the “Internet of Things”. He then presented

some of his work on novel localization-free coordinate system called Topology Coordinates (TC). There were some interesting questions from the audience at the end of the talk.

The talk was followed by light refreshments sponsored by the IEEE Queensland Section. This provided further networking opportunities for the audience. Professor Anrunas visit to Queensland was fully sponsored by the IEEE Queensland Section.

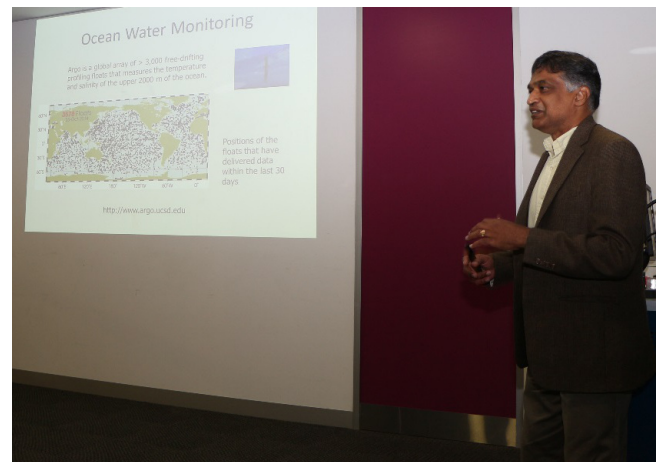


Figure 15: Professor Anura Jayasumana

Conference Organisation

Vaughan Clarkson was the Local Arrangements Chair for the 2014 IEEE Workshop on Statistical Signal Processing, which was held at the Gold Coast on June 29th - July 2nd 2014. The presented papers will be published on [IEEE Xplore](http://www.ieee.org).

Vaughan Clarkson is a General Co-Chair for the 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2015) to be held in Brisbane, Queensland, from April 19th - 24th 2015. ICASSP is the world’s largest and most comprehensive technical conference focused on signal processing and its applications. The series is sponsored by the IEEE Signal Processing Society. The conference features over 120 lecture and poster sessions.

CQUniversity Brisbane Campus Student Branch



DR. MARY TOM
m.tom@cqu.edu.au

Committee:

Chair: Martin Gustavo Jonatan Diaz
Vice-chair: Julie Shteinikova
Secretary: Arash Esmaeili Daneshvar
Treasurer: Andrew Muller
Student counsellor: Dr. Mary Tom

Introduction

IEEE Student Branch CQUniversity Brisbane Campus became operational in the second half of 2012. Establishing and keeping the branch active remains a challenging task due to the lack of engineering students on campus and the low number of ICT students. In spite of this, the branch is operational and the activities organised are well attended by on-campus students, professionals, and students from neighbouring universities located in Brisbane city.

Major Activities for 2014

In 2014 the student branch organised three events, two of which are technical events and one promotional activity as detailed below.

- **Pizza Lunch in Semester 1**

Date: March 25th
Venue: CQUniversity Brisbane Campus, 160 Ann Street, Brisbane

Following the IEEE student branch tradition in other universities, CQUniversity Brisbane Campus student branch offered Pizza Lunch to students and staff. The event is used to provide a briefing on IEEE student membership benefits, thus promoting student branch growth. This is also essential due to the short study period of students.

The student branch counsellor Dr. Mary Tom gave a short presentation briefing the benefits of taking up membership. A number of promotional materials were also circulated. The two office bearers, Arash Esmaeili Daneshvar and Andrew Muller, shared their IEEE experiences.

Approximately 45 students attended the event. Many students found the information appealing and expressed their interest in taking up membership. Students were also impressed by the opportunity to get leadership experience and the advanced technical knowledge that can be shared. Another interesting aspect was global networking opportunities with like-minded professionals. The email addresses of the attendees were collected to follow up their intentions to join IEEE.



Figure 16: Smell the pizza!

- **ICT Careers Evening**

Date: July 30th

Venue: CQUniversity Brisbane Campus, 160 Ann Street, Brisbane

This event was jointly sponsored by the Australian Computer Society and the IEEE CQUniversity Brisbane Campus Student Branch. It was a well-received event with over 55 participants including students from other universities in the Brisbane area such as Griffith and QUT. The event was chaired by Dr. Tom who gave a brief introduction to IEEE and ACS and encouraged students to take up membership to enjoy the full benefits.



Figure 17: Welcome by Dr. Mary Tom

The first speaker, Scott Barnes, User Experience Architect at Schneider Electric, provided a very information-rich talk exploring the 'Landscape of industry demand: current and near future'. Scott is a strategic, multidisciplinary designer, a coder and a user-experience architect with an eye for innovation and pixel perfection.



Figure 18: Scott Barnes presents

Paul Mansell, General Manager - Technology & Infrastructure, Spinal Injuries, Australia delivered an interesting talk on 'Service Learning:

Gaining Authentic Experience In Exchange For Service'.



Figure 19: Paul Mansell and Service Learning

Sina Anderson, ACS Young IT convenor and IT course leader at Evocca College engaged the audience with an interesting presentation on 'Generalised Enterprise Reference Architecture Methodology (GERAM); industry applications and career opportunities'.



Figure 20: Sina Anderson presents GERAM

The third speaker, Oleg Lukin, Database/BI Programmer, Queensland University of Technology, who is an alumnus of CQUniversity, shared his knowledge on 'Transition From A Student to an ICT Professional'.



Figure 21: Oleg Lukin presents

- **Seminar on ICT Skills and Entrepreneurship**

Date: November 4th

Venue: CQUniveristy Brisbane Campus, 160 Ann Street, Brisbane

This was a well-received event, attended mostly by ICT professionals and was co-sponsored by

the ACS and the CQU Brisbane student branch. The speaker, Dr. John Williams, took the audience progressively through his entrepreneurial experience of developing PetaLogix, a technology company which was later sold to Xilinx.



Figure 22: Dr. John Williams presents

University of Queensland Student Branch



ASSOCIATE PROFESSOR VAUGHAN CLARKSON
v.clarkson@uq.edu.au

Committee:

Chair: Jack McKinnon
Vice-chair: Andrew Lai
Secretary: Laura Benn
Treasurer: Seb Forsyth
Counsellor: Vaughan Clarkson

Introduction

The UQ Student Branch has continued to be active and successful in 2014, hosting and participating in major activities, and posting strong growth in student membership.

Major Activities for 2014

The following activities were organised this year:

- A recruitment drive/pizza lunch was held on Monday, March 17th, at the UQ First Year Engineering Learning Centre, featuring talks by Tapan Saha, Vaughan Clarkson and Mehdi Mosadeghy. Fifty new members were signed up at the event.
- A seminar on vacation work was held on Monday, August 4th. The aim of the seminar was to allow final-year students, who had previously had vacation work, to pass down any advice. More than fifty students attended and a dozen new members signed up.
- An event entitled A Day in the Life of an Engineer was held on Wednesday, September 17th. Professional engineers spoke about their day-to-day experiences in the workplace. The three speakers were Daniel Dwyer of Energex, Pat Bellett of GroundProbe, and Vaughan Clarkson of The University of Queensland. More than a dozen students attended.
- The PES Student Chapter was also very active in 2014. Please refer to the separate report.

Other Activities for 2014

The Student Executive were also on hand at numerous informal and School-organised events throughout the year. During Semester 1 Orientation Week (week of February 24th), the Executive were present at meet-and-greet sessions for new students.

On Wednesday, September 3rd, the Executive also assisted with the annual School of ITEE Discipline Lunch, an information session to engineering students in the common 1st-year about the programs offered in electrical and software engineering.

However, the stand-out other activity was the Australia and New Zealand Student Congress (ANZSCON) that was held at UQ from July 3rd to 5th. This was an enormous undertaking, in which the Student Branch Executive were heavily involved. Their efforts were rewarded with a splendid conference that did them all great credit and will be long remembered.

Announcements

Nominations for 2015 offices were solicited in August. The officers for 2015 will be Jeremy Taylor (Chair), Michael Broe (Vice Chair), Asleigh Tyrrell (Secretary) and Muhammad Badri Mhd Noor (Treasurer).

In closing, I'd like to thank the Chair, Jack McKinnon, and his Executive for their committed service this year and to wish the incoming Executive all the best for 2015.

University of Queensland PES Student Branch



MEHDI MOSADEGHY
m.mosadeghy@uq.edu.au

Committee:

Chair: Mehdi Mosadeghy
Vice-chair: Nadali Mahmoudi
Student adviser: Tapan Saha

Major Activities for 2014

The following activities were organised during the year:

- **Application of BESS and FACTS in power system operation**
Speaker: Dr Kenichi Kawabe, University of Toyama, Japan
Date: February 19th, 11:00-13:00
Attendees: 24 IEEE members



Figure 23: Dr. Kenichi addressing the audience

The seminar considered the applications of BESS and FACTS in power system controls during emergency states, such as resolution of transmission overload problems and the prevention of transient voltage stability after a large disturbance. The presentation also covered Dr Kenichi's recent work on the impact of photovoltaic power generation on short-term voltage stability.

The presentation was followed by a Q&A. The IEEE Queensland Section provided financial

support to arrange refreshments after the event.

- **Introducing GAMS and its applications in Power Engineering**
Speaker: Nadali Mahmoudi, PhD student at The University of Queensland
Date: May 9th, 14:00-15:00
Attendees: 15 IEEE members



Figure 24: Nadali Mahmoudi addressing the audience

The General Algebraic Modelling System (GAMS) is a powerful tool for optimization problems, particularly linear, non-linear and mixed-integer programming. During recent years and after deregulating power systems, there is a greater need for optimizations tools. The seminar introduced the basic modelling of mathematical programming in GAMS, which provides a simple power systems model. Various issues and error solutions were discussed.

- **AEMO's Graduate Development Program**
Networking Event
Date: May 19th, 13:00-14:00
Attendees: 40 IEEE members



Figure 25: Australian Energy Market Operator

This event was an opportunity to network with Australian Energy Market Operator (AEMO) leaders and graduate employees while learning more about AEMO's pivotal role in Australia's energy future, and how students can make a difference.

- **Queensland Distribution Network Challenges**
Speaker: Mr. Don McPhail, Ergon Energy
Date: May 27th, 10:00-11:00
Attendees: 48 IEEE members



Figure 26: Challenges in Queensland distribution network

In this seminar Don McPhail described the challenges in the distribution network faced by Ergon Energy as a distributor in Queensland and outlined the approaches taken to overcome these issues. Large-scale penetration of sustainable energy, expectation and implementation of smart-grid, and resilience of the distribution network in disasters are some of these challenges.

- **2014 IEEE PES General Meeting, July 27th - 31st 2014, Washington DC, USA**

The annual IEEE PES General Meeting brings together over 3,000 professionals from industry and universities. In this event power engineers and researchers present and discuss the key challenges and opportunities in the electric power industry. Eleven UQ PES student members attended this event and presented their papers and posters in different areas of power systems including solar energy, wind power, electricity market, transformers and high voltage studies. Two students won travel awards to attend the general meeting.



Figure 27: UQ PES members in Washington, DC

- **Distribution network issues in South East Queensland with record levels of Solar PV**
Speaker: Mr Colin Lee, Energex
Date: October 8th, 09:00-10:00
Attendees: 30 IEEE members



Figure 28: Distribution network issues seminar

Mr Colin Lee from Energex gave a lecture about the experiences and challenges of PV integration in South East Queensland. In this seminar he addressed several problems caused by high PV levels in the Energex network. Voltages outside regulated limits, reverse power flow, power quality and voltage fluctuations were some of the issues considered. Colin Lee also explained some

Energex action plans and solutions for these challenges.

- **ITEE Staff vs. Students soccer tournament**

UQ's Electrically Based Engineering Student Society (EBESS) organized a soccer tournament on October 10th and the IEEE PES team was runner up in the tournament. The PES team showed outstanding performance consistently throughout the tournament to reach the final game, but unfortunately lost the match in the last minute of the game.



Figure 29: EBESS