



**INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS INC.
(ARBN 078 576 495)**

QUEENSLAND SECTION

2014 ANNUAL REPORT SUBMITTED TO REGION 10

Based on a report originally presented at the
Queensland Section AGM on 3 December 2014

PART A – SECTION SUMMARY

A.1 Executive Summary

• SECTION EXECUTIVE COMMITTEE MEMBER LIST

Office	
Chair	Tapan Saha
Vice Chair	Daniel Eghbal
Secretary	Rahul Sharma
Treasurer	Ruifeng (Richard) Yan
Immediate Past Chair	Abbas Bigdeli
Newsletter Editor	Michael Swinton, Mike Robinson (Aug 2014 onwards)
Webmaster	Mike Robinson
Professional Activities	Olav Krause
Membership Development chair	Nilesh Modi
Awards & Recognition	Mike Robinson
Student Activities Chair	Jack Gaynor
Educational Activities Chair	Hugo Espinosa
Engineers Australia Liaison	Tapan Saha
Women in Engineering	Alexandra Price
Women in Engineering (Vice chair)	Angela Tuffley
Women in Engineering (Secretary)	Mary Tom
Aerospace and Electronic Systems Chapter	Steve Ashfield
Aerospace and Electronic Systems Chapter (VC)	John Davies
Aerospace and Electronic Systems Chapter (Sec)	Robert Kennedy
Computational Intelligence Chapter	Andrew Lewis
Computational Intelligence Chapter (VC)	<i>Vacant</i>
Computational Intelligence Chapter (Sec)	<i>Vacant</i>
Computer Chapter	Brian Lovell
Computer Chapter (VC)	Andrew West
Computer Chapter (Sec)	Mike Robinson
Control Systems/Robotics & Automation Chapter	Michael Kearney
Control Systems/Robotics & Automation Chapter (VC)	John Billingsley
Control Systems/Robotics & Automation Chapter (Sec)	Frederic Maire
Engineering in Medicine & Biology Chapter	Steve Wilson
Engineering in Med & Biology Chapter (VC)	Mohan Karunanithi
Engineering in Med. & Biology Chapter (Sec)	Secretary Qing Zhang
MTT/AP Chapter	Konstanty Bialkowski
MTT/AP Chapter (VC)	Greg Hislop
MTT/AP Chapter (Secretary)	Morteza Shahpari
Power & Energy and DEI Joint Chapters	Chandima Ekanayake
Power & Energy and DEI Joint Chapters (VC)	Yateendra Mishra
Power & Energy and DEI Joint Chapters (Secretary)	Jose Lopez Roldan
Power & Energy and DEI Joint Chapters (Student rep)	Mehdi Mosaddeghi
Signal Pro & Comms Chapter	Garry Einicke
Signal Pro & Comms Chapter (VC)	Vaughan Clarkson
Signal Pro & Comms Chapter (Sec)	Dharmika Jayalath
GOLD Affinity Group	Alexandra Price
GOLD Affinity Group (VC)	Prachi Redey
GOLD Affinity Group (Sec)	Matthew Zillman
Student Counsellor QUT	Seyit Camtepe (June onwards)
Student Counsellor UQ	Vaughan Clarkson
Student Counsellor GU-GC	Jahangir Hossain
Student Counsellor GU-Nathan	Sascha Stegen
Student Counsellor USQ	Paul Wen (March onwards)
Student Counsellor CQU – Brisbane	Mary Tom
Student Counsellor CQU – Rockhampton	Edward Palmer (July onwards)
UQ Student Branch Chair	Jack McKinnon

• SECTION HIGHLIGHTS

- 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.
- In 2013, QLD section had its first strategic meeting. Some very high standard for the chapters and affinity groups were set. In 2014, we are pleased to see that some chapters achieved even more than their goals. Most organisational units (chapters and affinity groups) hosted by the Section have held at least two meetings in 2014 required for official 'active' status.
- A joint chapter of the Dielectric and Electrical Insulation Society and the Power and Energy Society was formed in 2014. We hope this will bring additional audiences to our power engineering technical Activities.
- A number of Chapters have performed outstandingly during this year. Power & Energy Society Chapter, Joint Chapter of Microwave Theory and Techniques/Antennas and Propagation & Joint Chapter of Signal Processing and Communications have provided very high level of professional service to our Section Members. Computational Intelligence Society had a very active year relative to the last year. On behalf of QLD section 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.
- Student branches have mixed level of activities. University of Queensland student's branch again did exceptional service and they are to be congratulated. Other university branches have a long way to go.
- The Section actively continued to promote student activities and membership drive functions.
- Similar to previous years, the annual undergraduate thesis prize competition was before the AGM on December 2014 and two students were awarded with IEEE Student Thesis Award.
- In 2014, eleven executive committee meetings were held, plus the AGM. QLD Section committee meetings were organised at the University of Queensland, St. Lucia campus in Brisbane. We had very good attendances in the meetings and we provided opportunities for distant members to attend the meetings through teleconference/Skype as in previous years.
- QLD section chapter officers have written articles for Region 10 newsletters. This is a great way to publicize our work in Region 10.
- QLD section chapters 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.
- The section chair Prof Tapan Saha attended the Region 10 Section Chairs meeting in Kuching, Malaysia in March. This provided a great opportunity to meet the Region 10 leadership team and IEEE Headquarters office bearers. QLD section's proposal to host the 2015 IEEE Region 10 Section Chair meeting on the Gold Coast was not accepted due to high cost implications.
- The Queensland section chair 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.
- The Queensland section chair 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. The QLD chair attended the Australia Council meeting on the afternoon of August 22nd as well as many other activities during the next two days related to section leadership, management and other relevant matters.
- In 2014, Queensland section chair and vice-chair attended several PES Chapter and student branch functions, giving presentations on the benefits of IEEE membership to the attendees.
- A short course with Engineers Australia and IEEE PES chapter was organized and brought good income into the section. We hope this will be continued in the coming years and also other chapters get involved in organising such professional activities.
- We have been doing very well with our sister organisations including Engineers Australia and IET. QLD section chair attended most of Engineers Australia's Queensland Electrical Branch meetings as the immediate Past Chair of the Electrical Branch and IEEE liaison officer. This will be continued in 2015. Prof Tapan Saha has been elected to the Board of the Electrical College of Engineers Australia for 2015.
- QLD section chair regularly attended teleconference meetings of the IEEE Australia Council in order to coordinate with other Australian sections. Prof Tapan Saha was elected as 2015 IEEE Australia Council Chair.
- The Queensland Section's finances are in good condition with substantial savings and a reasonable operating fund.
- A Senior Membership promotion event was organized on 22nd October 2014. Thirty IEEE members attended the BBQ/senior membership elevation 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.

- In 2014, the MTT/AP joint chapter hosted **12 events** for the calendar year. This includes a planning meeting in February 2014 and 11 seminars and workshops on a wide range of topics relating to the diverse interests of our chapter.
- PES Chapter organised **9 technical programs** (7 technical seminars, one workshop, one workshop and one panel discussion). PES chapter was recognized as one of the High Performing Chapters under the High Performing Chapters Programs in 2013. PES chapter was recognized as a Runners-up chapter for 2013 Outstanding Large Chapter Award (This is the fourth year that PES chapter has won this award). PES also received funding of US\$2,500 from IEEE under the PES Member Driven Initiative program to organise a series of workshops. The first workshop was organized in November 2014 and was a very successful event.
- IEEE Signal Processing Society Queensland Chapter has been awarded Certification! This Certification will be valid for four years, so the Chapter will be certified from 1 January 2014 through 31 December 2017. Chapter will receive the following benefits in 2014: A certificate of merit plaque for the 2013 Chapter Chair, an appreciation certificate for each 2013 Chapter Officer and the Chapter Chair (or his representative) can apply for a travel support grant up to \$500 per Chapter to attend the next Chapter Chairs meeting at ICASSP 2014.

A.2 Financial Report from treasurer

In office: Dr. Ruifeng (Richard) Yan

Overall:

There is almost no change in the Term Deposit accounts except for an additional \$400 accrued interest. The Access chequing 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 chequing 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 - \$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	<u>41,690.56</u>	Expenses	<u>26,198.04</u>
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
	<u>0.00</u>		<u>4,746.71</u>
Total Income	<u>41,690.56</u>	Total Expenses	<u>30,944.75</u>

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	<u>89,894.22</u>
Accrued income	
Total assets	<u>89,894.22</u>
Liabilities	
Accrued expenses	4746.71
Total liabilities	<u>4746.71</u>
Net worth	<u>85,147.51</u>

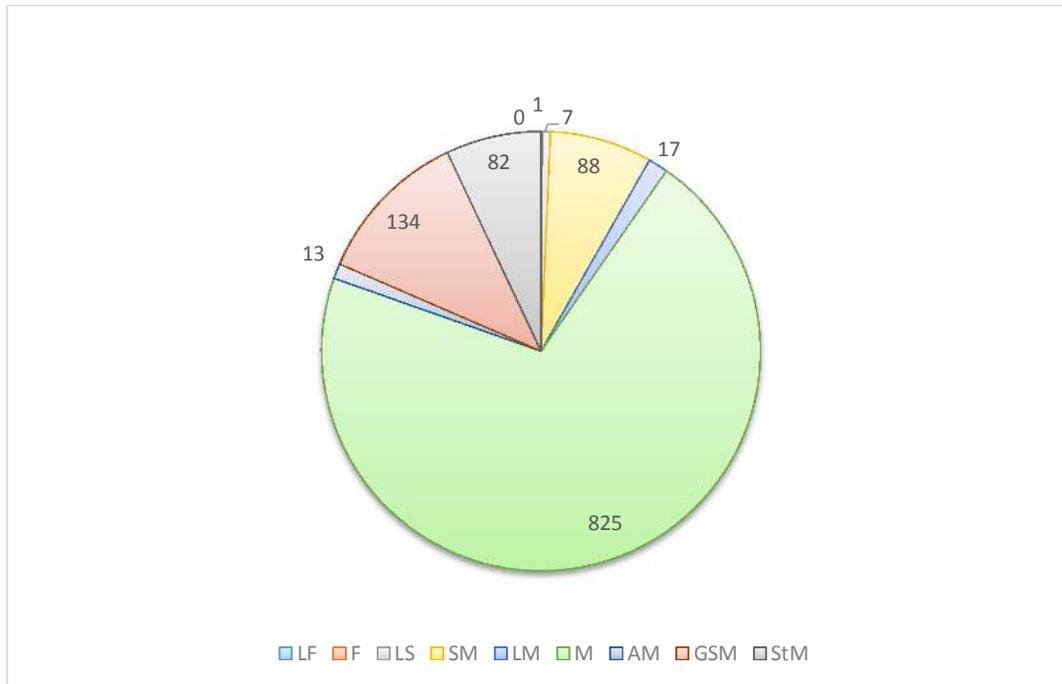
AESS	AEROSPACE AND ELECTRONIC SYSTEMS SOCIETY
CIS	COMPUTATIONAL INTELLIGENCE SOCIETY
CS	COMPUTER SOCIETY
CSS/RAS	CONTROL SYSTEMS/ROBOTICS AND AUTOMATION SOCIETIES
EMBS	ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY
MTT/AP	MICROWAVE THEORY AND TECHNIQUES/ANTENNAS AND PROPAGATION SOCIETIES
PES/DEIS	POWER AND ENERGY/DIELECTRICS AND ELECTRICAL INSULATION SOCIETIES
SP/CS	SIGNAL PROCESSING AND COMMUNICATIONS SOCIETIES
WIE	WOMEN IN ENGINEERING
YPP	YOUNG PROFESSIONALS PROGRAM

PART B – ORGANIZATIONAL ACTIVITIES

B.1 MEMBERSHIP DEVELOPMENT ACTIVITIES

In office: Dr. Nilesh Modi

Based on the latest available statistics our current membership number is 1167. We lost 9 members this year. Total membership distribution is shown in the following chart.



IEEE Membership distribution in 2014

IEEE highly recommends its members to take a society membership on top of the IEEE membership. I have recognized that many of our members have at least one society membership. However, still there are few members, especially student members who haven't joined any of the societies. As societies organize many technical activities I would suggest those members to join a suitable society when they renew their membership.

In the year 2014, we have initiated a senior membership elevation program to facilitate the process of membership elevation. This was a very successful event and 40 members submitted their application. At the time of preparing this report almost half of the application have been approved and the remaining are in the review process. Due to the positive feedback received after the event, Queensland section is planning to organise another senior membership elevation event in 2015.

In 2014 we have closely worked with IEEE - R10 to retain the higher grade members with arrears through an outreach program. The section has also supported student activities such as university based membership drives, which always helps to promote our activities among students. Also many activities including distinguished lecturer programs were organized by individual chapters, which were helpful for the promotion of IEEE. I'll take this opportunity to thank all members who helped to promote IEEE activities and looking forward to work closely with IEEE-QLD in future.

B.2 Chapter Activities

Below is the list of active chapters/joint chapters in QLD Section.

Chapter Title
Aerospace and Electronic Systems Society
Computational Intelligence Society
Computer Society
Control Systems/Robotics & Automation Society
Engineering in Medicine & Biology Society
Microwave Theory and Techniques Society/Antennas and Propagation Society Joint Chapters
Power & Energy Society and Dielectrics and Electrical Insulation Society Joint Chapters
Signal Processing & Communications Society

Performance of Power and Energy Society Chapter has been outstanding over the last few years. To bring additional audiences to the power engineering technical activities and extending membership benefits to Dielectric and Electrical Insulation Society members, a joint chapter of the Dielectric and Electrical Insulation Society and the Power and Energy Society was formed in 2014.

Following sub-sections summarise each chapter activity.

B.2.1 AEROSPACE AND ELECTRONIC SYSTEMS CHAPTER

Office Bearers:

Chair: Steve Ashfield

Vice-chair John Davies

Secretary: Robert Kennedy

The Aerospace and Electronic Systems Chapter held the following two events.

1.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), Prof Yanming Feng (QUT), Matt Higgins (Qld Govt) and Prof 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 27 – 28 Feb 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.

2.Technical seminar on ‘The Application of Frequency-Weighting to Improve Filtering and Smoothing Performance’ by Garry A. Einicke

Pioneering research on the perception of sounds at different frequencies was conducted by Fletcher and Munson in the 1930s. Their work led to a standard way of weighting measured sound levels within investigations of industrial noise and hearing loss. Frequency weightings have since been used within filter and controller designs to manage performance within bands of interest. This seminar introduced iterative frequency weighted filtering and smoothing procedures. It is assumed that filter and smoother estimation errors are generated by a first-order moving-average (AR1) system. This AR1 system is identified and used to apply a frequency weighting function

within the design of minimum-variance filters and smoothers. It is shown under prescribed conditions that the described solutions result in nonincreasing error variances. An example was described which demonstrates improved mean-square-error performance.

B.2.2 COMPUTATIONAL INTELLIGENCE SOCIETY

Office Bearers:

Chair: Dr. Andrew Lewis

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 year's 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.

B.2.3 COMPUTER SOCIETY CHAPTER

Office Bearers:

Chair: Brian Lovell

Vice-chair Andrew West

Secretary: Mike Robinson

The Computer Society Chapter participated in ANZSCON 2014. Mike Robinson, Secretary of the Computer Society, conducted a Teacher-in-Service Program workshop for a group of conference attendees on Saturday July 5th. The workshop was well attended and the participants enjoyed the practical exercise, which was making a functional windmill from paddlepop sticks, bits of wire, string, gladwrap, aluminium foil, strips of cardboard, and various odds and ends.

B.2.4 CONTROL SYSTEMS / ROBOTICS AND AUTOMATION SOCIETY

Office Bearers:

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 Netic 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 that’s 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.

B.2.5 ENGINEERING IN MEDICINE AND BIOLOGY CHAPTER

Office Bearers:

Chair: Professor 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 internetbased, virtual rehabilitation after cardiac events. Professor Zahra Moussavi spoke on biosignal analysis in Alzheimer’s disease

B.2.6 MICROWAVE THEORY AND TECHNIQUES/ANTENNAS AND PROPAGATION JOINT CHAPTER

Office Bearers:

Chair: Konstanty Bialkowski (The University of Queensland)

Vice Chair: Greg Hislop (CSIRO)

Secretary: Morteza Shahpari (Griffith University)

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 Micro 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 geoenvironmental 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, Microo 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.

B.2.7 POWER AND ENERGY SOCIETY CHAPTER

In office:

Chair: Dr. Chandima Ekanayake, UQ

Vice Chair Dr. Yateendra Mishra, QUT

Secretary: Jose LOPEZ-ROLDAN, Powerlink

UQ PES Student branch chair: Mr. Mehdi Mossadeghi

Highlights of -2014

- PES has organised 9 technical events (7 technical seminars, one workshop and 1 panel discussion).
- PES chapter was recognized as one of the High Performing Chapters under the High Performing Chapters Programs in 2013.
- PES chapter was recognized as a Runners-up chapter for 2013 Outstanding Large Chapter Award (This is the fourth year that PES chapter has won this award).
- PES received a funding of USD 2500 from IEEE under PES Member Driven Initiative program to organise a series of workshops.
- PES Chapter awarded two student travel prizes for student members to attend and present paper at the 2013 IEEE PES General Meeting conference, held in Washington DC, USA. Mr. Nahid-AI Masood and Mr. Junhyuck Seo from the University of Queensland (UQ) were the winners of this award. Each winner received a cheque worth \$1000.
- 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 website of the PES chapter
- PES-DEIS joint chapter has been formed
- PES chapter vice chair attended 2014 IEEE Region 10 chapter chairs meeting.

Seminars and workshops

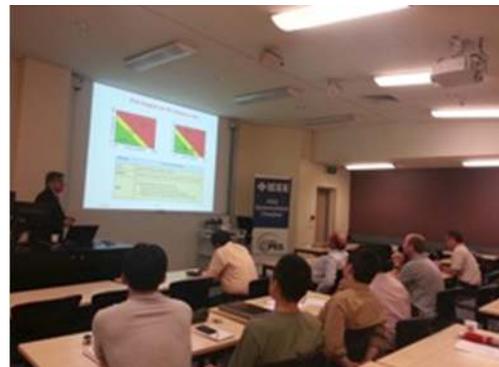
1) Technical Seminar

Title: Partial Discharge Testing and Monitoring of Power System Assets

Date: 28th March 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, the 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.



2) Technical Seminar

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

Date: 16th April 2014 Venue: Powerlink Qld, Virginia

Speaker: Dr. Ramakrishna (Rama) Gokaraju,

Dr. Ramakrishna (Rama) Gokaraju is an A/Prof. 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. In this seminar it was 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 also discussed.



3) Workshop (CPD course):

Title : Electrical Insulation Fundamentals

Date: 9 May, 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 have been 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 will review the fundamentals of electrical insulation. It will explain the insulating structures found in high voltage equipment such as switchgear, transformers, outdoor insulators and cables.

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



4) Technical Seminar

Title: Transformer Fire Safety Practices

Date: 22 May 2014 Venue: Engineering House, Engineers Australia

Speaker: Arne Petersen

Arne is a consulting engineer, specialising in transformer technology. He has twenty seven (27) years experience as transformer specialist and manager of HV Plant for Powerlink, Qld.

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 Cigre's Technical Brochure No. 537 - Guide to Transformer Fire Safety Practices. It is Cigre's 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.

5) Technical Seminar

Title: Microgrid Modeling and Research at the University of Texas at Austin, Center for Electromechanics

Date: 25 June 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.

6) Technical Seminar

Title: Distribution level FACTS devices for improved load capability and solar integration

Date: 26 August 2014

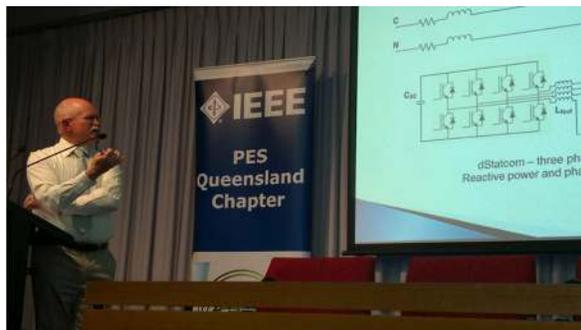
Venue: The Engineering House, Engineers Australia

Speaker:

Prof. 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 presentation 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 a LV network.



7) Technical Seminar

Title: Requirements Engineering in Smart Grids and current direction of R&D for Energy transition in Germany

Date: 11 September 2014

Venue: The University of Queensland

Speakers:

Prof. Sebastian Lehnhoff of University of Oldenburg, Germany and **Prof. Christian Rehtanz** of TU Dortmund University, Germany



Prof. Christian Rehtanz



Prof. Sebastian Lehnhoff

Summary:

This presentation gave an overview of smart grid and current R&D in German Energy transition (Energiewende). Prof Sebastian discussed how ICT requirements engineering supports roll-out of new services and the development of the Smart Grid. Prof. 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.

8) Panel Discussion

Title: NEM- Current trends and future uncertainties

Date: 23 October 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 - AEMO - is the Acting Manager of Supply Forecasting with the Australian Energy Market Operator.

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

Dr Joel Gilmore - EY - 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 Prof. Tapan Saha from the University of Queensland.

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.



9) Workshop

Title: IEEE workshop on distribution network management

Date: 24 November 2014 Venue: Energex, Newstead

Speakers:

Graeme McClure - Principal Engineer Protection, Control & Automation; AusNet Services.

Prof. Tapan Saha – Leader PES research group, The University of Queensland

Summary:

The workshop was covered with 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 UQ's 1.2MW solar roof-top PV plant at St Lucia campus and the under-construction 3MW solar plant at Gatton Campus.



PES Student travel award

IEEE Qld Section PES Chapter awarded two Student Conference Travel Prizes each worth \$1000. In 2014 PES chapter received 15 applications from the 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 in 2014. Award winners will receive a certificate from IEEE Queensland section during the section Annual General Meeting.

Student prize awardees Nahid (2nd from left) and Jun (3rd from left) with PES chair Dr. Chandima Ekanayake (Left) and Section Chair Prof. Tapan Saha (Right)



PES 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 of "IEEE Power & Energy Society of Queensland Outstanding Engineer Award" was presented to him during the IEEE microgrid modelling seminar on 25th June 2014 by the former Chair IEEE PES Queensland chapter Dr. Daniel Eghbal.



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 QLD PES chapter.

Previous PES Outstanding Engineer Award recipients

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

B.2.6.1 IEEE PES UQ Branch Activities

1. Application of BESS and FACTS in power system operation

Speaker: Dr Kenichi Kawabe, University of Toyama, Japan

Date(s): Wed 19/02/2014, 11:00-13:00

No. of Attendees: 24 IEEE members

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

The presentation was then followed by the Q&A. In addition, IEEE Queensland section provided financial support to arrange refreshment after the event.



2. Introducing GAMS and its applications in Power Engineering

Speaker: Nadali Mahmoudi, PhD student at The University of Queensland

Date(s): Friday 09/05/2014, 14:00-15:00

No. of Attendees: 15 IEEE members

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 more need for optimizations tools. This seminar introduced the basic modelling of mathematical programming in GAMS, provides a simple power systems model programmed in this software and raised some issues and error solutions for that.



3. AEMO's Graduate Development Program Networking Event

Date(s): Monday 19/05/2014, 13:00 –14:00

No. of Attendees: 40 IEEE members

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



4. Challenges in Queensland Distribution Network

Speaker: Mr. Don McPhail, Ergon Energy

Date: 27/05/2014, 10:00-11:00

No. of Attendees: 48 IEEE members

In this seminar Don McPhail described the challenges in 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 resilient of distribution network in disasters are some of these challenges.



5. 2014 IEEE PES general meeting, July 27-31, 2014, Washington DC, USA

The annual IEEE PES General Meeting brings together over 3000 professionals from industry and universities. In this event power engineers researchers present and discuss the key challenges and opportunities in the electric power industry. This year 11 UQ PES student members attended this event and presented their papers and posters in different areas of power system including solar energy, wind power, electricity market, transformers and high voltage studies. Two of these students could achieve QLD IEEE PES best paper award and were supported to attend this general meeting.



6. Distribution network issues in SEQ with the record amounts of Solar PV

Speaker: Mr Colin Lee, Energex

Date: 08/10/2014, 09:00-10:00

No. of Attendees: 30 IEEE members

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



7. ITEE Staff vs. Student Soccer Tournament at UQ

UQ's Electrically Based Engineering Student Society (EBESS) organized a soccer tournament on Friday 10th of October and IEEE PES team became runner up in this tournament. Our team showed outstanding performance consistently throughout the whole tournament and reached the final game, but were unfortunate to lose the final in the last minute.



B.2.8 JOINT CHAPTER OF SIGNAL PROCESSING AND COMMUNICATIONS

Office Bearers:

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 online 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.

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.

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.

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.

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.

B.3 Professional and Continuing Education Activities

Queensland Section Chair, Professor Tapan Saha, attended The Queensland Academy for Science Mathematics and Technology (QASMT) Career Mentoring Breakfast on 26th June 2014 from 7 am to 9:30am.

This was for year 12 students graduating in 2014 and going to University in 2015. At least forty students attended and were given advice about engineering admission and career goals.

Queensland Section in collaboration with Engineers Australia has been organising technical workshops for power system engineers to help them update their knowledge on recent developments in condition monitoring and professional development. PES chapter has been highly involved in organising these events.

B.4 Students Activities

B.4.1 STUDENT ACTIVITIES REPORT

In office: Jack Gaynor

B.4.2 IEEE UNIVERSITY OF QUEENSLAND STUDENT BRANCH

In office:

Chair: Jack McKinnon

Vice Chair: Andrew Lai

Secretary: Laura Benn

Treasurer: Seb Forsyth

Counsellor: Vaughan Clarkson

Power & Energy Chapter Chair: Mehdi Mosadeghy

Power & Energy Chapter Counsellor: Tapan Saha

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-today 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.

B.4.3 IEEE CQUNIVERSITY BRISBANE CAMPUS STUDENT BRANCH

In office:

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 attend 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: CQUniveristy 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. Approximatel 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.

ICT Careers Evening

Date: July 30th

Venue: CQUniveristy 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. Mary Tom who gave a brief introduction to IEEE and ACS and encouraged students to take up membership to enjoy the full benefits.

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.

Paul Mansell, General Manager – Technology & Infrastructure, Spinal Injuries, Australia delivered an interesting talk on 'Service Learning: Gaining Authentic Experience In Exchange For Service'.

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'.

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'.

Seminar on ICT Skills and Entrepreneurship

Date: November 4th

Venue: CQUniversity 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.

B.5 Affinity Group Activities

B.5.1 WOMEN IN ENGINEERING (WIE)

Office Bearers:

Chair: Alexandra Price

Vice-chair: Angela Tuffley

Secretary: Dr. Mary Tom

In 2014, WIE organized few events including the 2014 IEEE ANZSCON in Brisbane.

The ANZSCON Women in Engineering Breakout Session was the first of two specifically targeted women in engineering events part of the 2014 Australian and New Zealand Student and Young Professionals Congress (ANZSCON) held in Brisbane, Australia. The congress was held over two and a half days with the Women in Engineering Breakout Session occurring on the afternoon of the first day. This session was run by Helene Fung from the Western Australian section. Helene gave two presentations during the break-out session. The first presentation provided an introduction and overview to IEEE Women in Engineering (WIE) both at the global and Asia Pacific Regional levels. In the second session Helene explored some common issues that professional women often encounter working in industry and shared her own experience working in engineering, management consulting and mining sectors. The session was very well received.



The ANZSCON Women in Engineering Networking Breakfast was one of two specifically targeted women in engineering events part of the 2014 Australian and New Zealand Student and Young Professionals Congress (ANZSCON) held in Brisbane, Australia. The congress was held over two and a half days with the Women in Engineering Networking Breakfast occurring on the morning of the second day. Prachi Redey, vice-chair of ANZSCON, gave a talk representing an organisation called Tech Girls are Superheros which had recently released a book of the same title. The book contained a number of superhero alter egos based on real-life women in technology and engineering related fields.

The breakfast was well attended and a great opportunity for the women attending ANZSCON to network with each other as well as representatives from industry.



B.5.2 YOUNG PROFESSIONALS AFFINITY GROUP

Office Bearers:

Chair: Alexandra Price

Vice-Chair: Prachi Redey

Secretary: Matthew Zillmann

2014 ANZSCON

The 2014 IEEE Australia and New Zealand Student Congress (ANZSCON2014) was hosted by the Queensland Section at the University of Queensland in Brisbane on July 3rd-5th, 2014.

The congress was highly successful with over 50 delegates attending from Australia and New Zealand. ANZSCON2014 received positive feedback from delegates as well as from IEEE Region 10 and the Australia Council.

Headed by Conference Chair Alexandra Price and Program Director Prachi Redey, the organising committee presented 2 and a half days of engaging talks and workshops, as well as opportunities for delegates to showcase their skills through the poster competition and the 3 Minute Thesis competition. The Treasure Hunt ice breaker, a Women in Engineering networking breakfast, and the Congress dinner provided networking opportunities for delegates.

The congress hosted a range of speakers from academia and industry, who presented on a variety of topics from self-development for professionals to cutting-edge technology in power network grids; from innovation in IT and startups such as Cartesian Co and Tanda to encouraging entrepreneurship in women in technology; and other topics as diverse as the technology behind Cochlear ear implants and how to influence top management.

The presence of IEEE dignitaries at ANZSCON2014 allowed discussion regarding IEEE and an exchange of ideas between volunteer delegates. Lance Fung, Australia Council Chair 2014, provided an overview of IEEE and its structure and operation, and shared his 20-year experience of IEEE involvement with delegates. Darrel Chong, Vice-Chair of Region 10 Membership Activities, presented on volunteer empowerment in IEEE.

Including the ANZSCON, Young Professionals Affinity Group organized 4 events in 2014.

1. Event Title: *How to Influence Top Management*
Date: 2014-07-03 15:30 – 16:30
Speaker: Liam Waldron from ACT Section at ANZSCON 2014.
2. Event Title: *Introduction to IEEE Young Professionals*
Date: 2014-07-03 15:00 – 15:30
Speaker: Alexandra Price on behalf of Noel Gomes at ANZSCON 2014.
3. Event Title: *Self Development and Personal Growth*
Date: 2014-07-04 10:00 – 10:30
Speaker: Michael Morahan at ANZSCON 2014.
4. Event Title: *ROAMES: Using Drones for Asset Management*
Date: 2014-07-04 11:00 – 12:00
Speaker: Ian McLeod, CEO Ergon Energy at ANZSCON 2014.

2014 IEEE Section Congress

In 2014, QLD Young Professionals Affinity Group Chair attended the 2014 IEEE Section Congress in Amsterdam. Below is her report:

I (Alexandra price) had the privilege of attending the 2014 IEEE Section Congress held in Amsterdam, The Netherlands, August 22nd-24th 2014.

The IEEE Section Congress is held every three years with 2014 being the first time the event had been held outside of North America. The section congress contained two days packed full of parallel sessions on all sorts of topics from an introduction to IEEE standards through to leadership soft skills.

I attended sessions predominantly related to Young Professionals and Women in Engineering affinity groups. I also walked around the exhibition area during breaks where I met with representatives from a huge array of groups within IEEE.



Australia and New Zealand Council Members attending SC-2014, with Alex Price 4th from left in the 3rd row

The Section Congress is an ideal location to develop networks and I made friends with a number of young professionals from around the globe.

One of my favourite parts of the congress was attending the IEEE Awards Ceremony. Award recipients included the creator of Matlab, inventor of the insulated gate bipolar transistor (IGBT), and the chief engineer of the Large Hadron Collider. Attending this event made me realise the calibre of IEEE and I felt privileged knowing I was a member of an organisation which has such accomplished members.

I would encourage Queensland IEEE volunteers to attend a future IEEE Section Congress if the opportunity arises as I found it to be a very valuable experience. I would like to thank the Queensland Section and Region 10 for supporting my attendance.

B.6 Awards & Recognition Activities

B.6.1 AWARDS & RECOGNITION REPORT

In office: Mike Robinson

For 2014 the committee has retained the award structure that was used for previous years. This encompasses three award categories.

The first 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. They are awarded to all people in this category without requiring nomination.

The second category is **Outstanding Contribution** awards. These are awarded 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 by members of the IEEE Queensland Section, along with a reason for the nomination, to be submitted to the section committee.

The third 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 by members of the IEEE Queensland Section are submitted to the section committee for final selection of volunteer of the year.

Awards

Recognition of Service

A total of 9 Recognition of Service awards were awarded within the IEEE Queensland Section for 2013.

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

Outstanding Contribution

Three Outstanding Contribution awards were awarded within the Queensland section for 2013.

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

Volunteer of the Year

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

Thesis prize awards

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

1. 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*'.
2. 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 Power & Energy Society (PES) Queensland Chapter Student Conference Travel Prize was awarded to two recipients this year:

1. *Nahid Masood* from *The University of Queensland* for presenting the paper entitled '*Frequency response with significant wind power penetration: case study of a realistic power system*' during the IEEE PES 2014 General Meeting, in Washington DC, USA.
2. *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.

B.7 Communication Activities

B.7.1 REPORT FROM NEWSLETTER EDITOR

In office: Mike Robinson

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 laytech.

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.

B.7.2 REPORT FROM THE WEBMASTER

In office: Mike Robinson

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!

PARTS C & D

C.1 Relationship with National Societies

IEEE Queensland Section has been doing very well with its sister organizations including Engineers Australia and IET. The Section Chair Prof Tapan Saha attended most of Engineers Australia's Queensland Electrical Branch meetings as the immediate Past Chair of Electrical Branch and IEEE liaison.

C.2 Special Events

IEEE Queensland Section Members participated in 2014 annual Fraternity Dinner organised by Engineers Australia's Queensland Electrical Branch. IEEE PES Chapter organised a number of seminars and workshops at the Engineers Australia premises in Brisbane city. This brings IEEE activities to non-members of IEEE, who are members of Engineers Australia.

C.3 Problems to be anticipated

NONE

C.4 Best Practices of your section (which you would like to share with other sections for the benefits of members)

IEEE Queensland Section works very closely with the local professional body (Engineers Australia) and as well with local industries. Specific example is PES chapter's engagement with the local power industry. A number of PES events were organized at two Queensland electricity distribution company premises. Catering was done by those organizations and there were high level of technical engagements from the electricity industry in the IEEE PES Chapter activity. MTT/AP has also performed outstandingly in providing their service to the members through local industry engagement. Dedications from the volunteers of these two chapters are noteworthy. Inaugural of the senior membership elevation event was very successful. 50% increase in the number of senior members was achieved. A few members after the event expressed their interest in getting involved in section activities.

PART D - GOALS AND PLANS

D.1 Continuation of Project/Activity in Progress and Their Implementation Plans

A number of chapters and affinity groups have exceeded our highest level of expectations by their activities. A number of chapters did not perform well as per our expectation. Section will work closely with the new committees of those chapters and make sure they perform well. We will also maintain our collaboration with the local professional bodies and industry to promote IEEE.

D.2 Goals and Future Plans

At this stage we will start 2015 activities with 2014 goals and plans as below. Then we will update the goals with our new committee and set timeline for each target.

- Organize six events by each chapter and affinity group
- More engagement with the local professional body
- Active engagement with local industry
- Establish student chapters and maintain active engagement with the student communities in six university campuses in Queensland Section
- At least one DL program by each chapter
- Organise at least one Senior Membership Elevation event
- Active in conference/workshops and short course for continuing professional development and build fund for the Section/chapter
- Engage actively with the Australia Council
- Promote IEEE Membership among industry colleagues, who are non-IEEE members

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