



INSTITUTE OF  
ELECTRICAL AND  
ELECTRONICS ENGINEERS

QUEENSLAND SECTION  
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ANNUAL REPORT  
SUBMITTED  
TO REGION 10  
FOR 2016

BASED ON THE REPORT ORIGINALLY PRESENTED FOR  
QUEENSLAND SECTION AGM AT  
THE UNIVERSITY OF QUEENSLAND  
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# Section Chair's Report



**GARRY EINICKE**  
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## Part A Review of 2016

This is the final year of my term as Chair of the Queensland Section of the IEEE.

We have approximately 910 higher grade members and 196 student members, that is, 1106 members in total. This represents a reduction of 3% compared to 2015 and compares favourably with other Australian Sections.

Our Organizational Units (Chapters and Affinity Groups) have organised 70 events. Most OUs hosted by the Section have held at least two events in 2016. I am grateful to our most outstanding Chapters: Signal Processing & Communications (led by Andrew Bradley), Power & Energy (led by Nilesh Modi) and Computational Intelligence (led by Amin Gharipour).

Our most successful event was the Australasian Universities Power Engineering Conference (AUPEC 2016), which was held at the University of Queensland on 25-28 September, 2016. The Power and Energy Team including Tapan Saha (Conference Chair), Nilesh Modi (PES Chair), Rahul Sharma (PES Vice Chair) and David Batterham (Secretary) are to be congratulated for their success.

The Queensland Section's financial position remains healthy. We have benefited from the efforts of our

ICASSP 2015, APPECC 2015 and AUPEC 2016 volunteers who have injected modest cash contributions into our accounts - which in turn is used to support ongoing seminars, workshops and conferences.

## Part B Closing Remarks

At our Section level, the IEEE is staffed by volunteers. I am grateful to the following two outstanding IEEE Queensland Office Holders who have spent hundreds of hours behind the scenes to benefit our electrical engineering community:

- The outgoing Australia Council Chair - Tapan Saha.
- The outgoing Queensland Section Webmaster and Treasurer - Mike Robinson.

There are organizational changes in progress, namely, establishing a legal entity, provisionally known as IEEE Australia, to better manage our risks/liabilities and processes. Australia's Section Chairs and Vice Chairs will be responsible for managing these changes. I thank the incoming Queensland Section Chair, Daniel Eghbal, and the Vice Chair, Nilesh Mod, for taking on the tasks ahead.

I hope that you all enjoy the festive season and I look forward to supporting you in 2017.

# Section Vice-Chair's Report



**DR. DANIEL (MEHDI) EGHBAL**

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2016 was my third and last year as section vice-chair. It was another productive year with major activities including Region 10 section chair's meeting, hosting IEEE conferences and working with young volunteers in the Queensland Section Committee.

IEEE Region 10 annual meetings are held in March every year in one of the Region 10 countries. Unfortunately, over the past two years, Queensland Section's bids to host the event were unsuccessful due to the lower overall cost of organising the event in South East Asia. This year the annual meeting was held in Bangkok, Thailand. Region 10 annual meetings provide a great opportunity for all section leaders in the region to share experiences, ideas and discuss their challenges face to face.

I am pleased to share with you that in 2016, our section was one of the active sections in Region 10. Queensland Section did not win the Outstanding Section Award but the outstanding performance of some of our chapters has been recognised internationally. I believe membership development, professional and educational activities are areas that we can improve our performance.

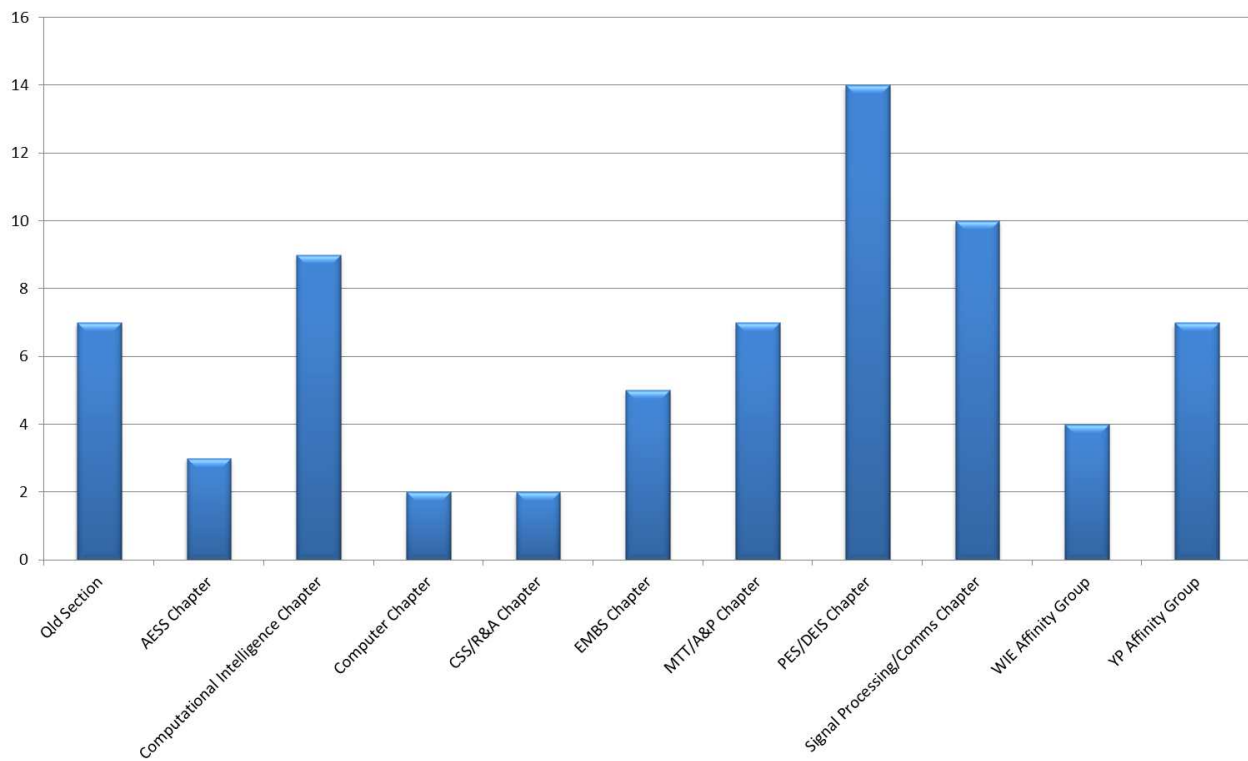
In 2016, the Queensland Section's chapters and affinity groups organised 70 technical and professional events including technical seminars, workshops, and distinguished lecture seminars. Please see the chart on the next page for details.

The section committee has about 70+ positions including members of the section executive committee, chapter and affinity groups' officers, student branch volunteers and student councillors. All officers are volunteers and elected annually. I am pleased to announce that almost all executive committee and chapter positions for 2017 are filled. The 2017 committee will be a team of experienced and new volunteers and I look forward to working with them. The full list of 2017 officers and any vacant positions will be announced during the Annual General Meeting on 29 November. I would like to thank all the nominating committee members and chairs for their help in achieving this result.

In summary, it is a privilege working with a great team of volunteers. Going forward, with a great team I believe we can improve our performance and increase engagement with our members. I look forward to meeting you at the AGM and working with the new committee members in 2017.

Last but not least, I want to thank all IEEE volunteers and members that I had the pleasure to work with in 2016. I wish everyone a Merry Christmas and hope you have happy holidays.

Please stay safe during the holiday season.



Number of Technical and Professional Events in 2016

# Secretary's Report



**DR. GHAVAMEDDIN NOURBAKHS**  
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This is the first year (2016) of my role as the secretary of the Queensland Section of the IEEE.

In this year, I have prepared ten monthly (February – November) committee meeting minutes including; meeting agenda, officers' reports and attendance records. I have also called the meetings and submitted the minutes to the Webmaster for publication on our site.

I would like to thank all committee members for their active contribution, participation and cooperation, and assisting me in my role as the secretary.

The meetings were held at The University of Queensland in Brisbane, Australia. The attendance was in person and via remote Skype conference call.

This year's summary of committee members participation in the meetings are compiled and provided in the following table:

Office Holders	Attending	Apology	Absent	Skype	Score
Afsaneh Narimani	3	1	0	0	4
Alan Wee-Chung Liew	1	0	7	2	10
Alexandra Posoldova	4	2	0	4	10
Amin Gharipour	0	2	3	5	10
Andrew Bradley	1	5	4	0	10
Andrew Lewis	0	5	4	1	10
Antony Lui	5	4	1	0	10
Arslan Akram Nizami	3	4	2	0	9
Ben John	1	1	0	0	2
Daniel Eghbal	9	1	0	0	10
David Batterham	9	1	0	0	10
David Russell	10	0	0	0	10
Dian Tjondronegoro	0	0	7	3	10
Domagoj Leskarac	3	4	2	0	9
Edward Palmer	0	1	5	4	10
Garry Einicke	10	0	0	0	10
Ghassem Mokhtari	2	0	0	0	2
Ghavam Nourbakhsh	9	1	0	0	10
Hamid Amini Moghadam	3	1	6	0	10
Hanxiao Zhang	5	2	3	0	10
Jahangir Hossain	0	2	0	3	5
Jan McSweeney	0	0	2	0	2
Jaroslav Krata	6	3	1	0	10

<b>Office Holders</b>	<b>Attending</b>	<b>Apology</b>	<b>Absent</b>	<b>Skype</b>	<b>Score</b>
Jeremy Taylor	6	0	4	0	10
Jingxin Xu	2	3	5	0	10
Kalum P. Udagepola	2	0	0	8	10
Ken Morris	1	5	1	3	10
Kieran Tranter	0	2	8	0	10
Konstanty Bialkowski	3	1	0	6	10
Lakshitha Naranpanawe	1	3	6	0	10
Luis Mejias Alvarez	3	2	2	3	10
Lyria Bennett Moses	0	0	2	0	2
Marie Luise Wille	7	3	0	0	10
Mark Broadmeadow	2	2	2	4	10
MB Mhd Noor	0	0	1	0	1
Michael Broe	1	1	8	0	10
Michael Rigby	0	0	2	0	2
Mike Robinson	8	0	0	1	9
Mohanraj Karunanithi	0	2	5	3	10
Mojtaba Moghimi	1	5	4	0	10
Morteza Shahpari	1	0	6	3	10
Mostafa Shahbani	2	1	5	2	10
Navinda Kottege	3	5	1	1	10
Nazanin Nadian	3	4	3	0	10
Negareh Ghasemi	8	2	0	0	10
Nilesh Modi	7	3	0	0	10
Nima Khoshsirafat	3	1	0	0	4
Paul Wen	0	0	1	0	1
Preethi Chandra	0	3	1	6	10
Qing Zhang	1	1	6	2	10
Rahul Sharma	1	7	2	0	10
Reuben Peterkin	9	0	0	1	10
Reza Akbarzadeh Sohi	6	3	0	1	10
Rob Makaremi	6	4	0	0	10
Robert Kennedy	3	2	0	5	10
Ruslan Puscasu	0	0	4	0	4
Samuli Haataia	0	1	1	1	3
Sangeetha Kutty	0	5	3	2	10
Sascha Stegen	2	7	0	1	10
Tapan Saha	8	2	0	0	10
Tomasz Bednarz	0	0	7	0	7
Vaughan Clarkson	5	5	0	0	10
Xinren Marcus Jiang	1	5	3	0	9
Yan Li	0	0	10	0	10
Yateendra Mishra	0	2	2	6	10
Zahra Jadidi	0	1	4	5	10

# Awards and Recognition Report



**PREETHI PREETHICHANDRA**  
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This year the Awards and Recognition committee has retained the award structure used in previous years. The process is also the same as 2015. From 2015 onwards the awards process commences early in the year immediately following the year being evaluated.

There are three award categories for section volunteers and two award categories for student members. While 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 16 Recognition of Service awards were presented by the IEEE Queensland Section in 2016.

Recipient	Role
Tony Sahama	Section Secretary
Hugo Espinosa	Section Newsletter Editor
Alireza Jolfaei	Professional Activities
Andrew Lewis	Computational Intelligence Society Chair
Amin Gharipour	Computational Intelligence Society Vice-Chair
Mike Robinson	Computer Society Secretary
Greg Hislop	Microwave Theory and Techniques/Antennas and Propagation Chapter Chair
Konstanty Bialkowski	Microwave Theory and Techniques/Antennas and Propagation Chapter Vice-Chair
Antony Lui	Microwave Theory and Techniques/Antennas and Propagation Chapter Secretary
Chandima Ekanayake	Power and Energy Society Chair
Nilesh Modi	Power and Energy Society Vice-Chair
Ruifeng(Richard) Yan	Power and Energy Society Secretary
Alexandra Posoldova	Women in Engineering Affinity Group Chair
Bafrin Zarei	Women in Engineering Affinity Group Vice-Chair
Marie-Luise Wille	Women in Engineering Affinity Group Secretary
Mohammad Amanzadeh	Young Professionals Program Affinity Group Chair



### Outstanding Contribution Awards

Nine Outstanding Contribution awards were awarded by the Queensland Section in 2016.

Recipient	Role
Tony Sahama	For dedication to the very important role of Section Secretary, and a perfect attendance record
Alireza Jolfaei	For revitalising the role of Professional Activities, organising several events through the year
Greg Hislop	For maintaining an outstanding schedule of activities for the MTT/A&P chapter
Konstanty Bialkowski	For maintaining an outstanding schedule of activities for the MTT/A&P chapter
Chandima Ekanayake	For maintaining the excellent and longstanding tradition of the PES chapter in organising many relevant activities for its members
Alexandra Posoldova	For revitalising the WIE affinity group, organising several activities and laying the foundations for its continued success
Mohammad Amanzadeh	For revitalising the Young Professionals affinity group and organising several activities
Nilesh Modi	For outstanding contribution towards PES chapter and organising the 2015 APPEEC conference
Ruifeng(Richard) Yan	For outstanding contribution towards PES chapter and organising the 2015 APPEEC conference

### Volunteer of the Year Award

A vote was taken by members of the IEEE Queensland Section committee and Konstanty Bialkowski was elected Volunteer of the Year for 2015.

### Undergraduate Student Thesis Awards

Each year, the IEEE Queensland Section administers three thesis prizes for undergraduate students in Queensland universities. 2016 winners of undergraduate student thesis awards are:

- The IEEE Student Thesis Prize (general category)  
Daniel Muthukrishna, Thesis title: “Deep Learning for the Spectral Classification of Transient Astronomical Objects” from the University of Queensland
- The ICPADM-Mat Darveniza IEEE Student Prize (Power Engineering category)  
Reza Akbarzadeh Sohi, Thesis title: “Semi-Automation of LV Network Balancing” from Griffith University
- IEEE Student Prize (Signal & Image Processing)  
Aiden Carey, Thesis title: “Reducing background noise in ultra low field nuclear magnetic resonance” from the University of Queensland

**PES Travel Prize Awards**

Each year the IEEE Power and Energy Society invites student members to attend its Annual General Meeting and submit papers and/or posters. The meetings are usually held in the USA. The Queensland Section's PES chapter awards two travel grants of \$1,000 each to students studying power engineering at Queensland universities to facilitate attendance at the AGM. 2016 recipients who were awarded \$1000 each are

- PhD candidate from the University of Queensland Juliana Barbosa Nunes
- PhD candidate from the University of Queensland Amit Dhoke

**PES Outstanding Engineer Award**

This annual award recognises outstanding technical, professional, and society contribution on behalf of the power and energy profession. The 2016 winner is Professor Peter Wolfs from Central Queensland University.

# Educational Activities Chair's Report



**PROFESSOR KALUM UDAGEPOLA**  
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## The Year in Review

2016 is my second year as Educational Activities Chair. My main function is coordinating educational activities in the chapter.

Initially, I planned to organise more than two functions across Queensland. I particularly targeted events at the University of Queensland, Queensland University of Technology, and Griffith University.

I proudly organized an event at the University of Queensland on 21 March 2016 titled "Developing Data Mining and Visualisation Techniques for the Integrated Analysis of Complex Spatially-located Data Sets for Both Exploration and Mining Purposes".

For this seminar, we invited two experienced experts from Mining Systems Group QCAT, CSIRO. We targeted an audience of students, researchers and young engineers who are interested in expanding their knowledge in this area. The experts delivered their sessions on topics which covered "Drilling Technologies Automation Monitoring" and "Knowledge from Data Using Self Organizing Maps".

The event started with a welcome speech from Ms. Hanxiao Zhang, where she introduced Mr. Stephen Fraser, Senior Principal Research Scientist from CSIRO and Mr. Andrew Olsson, Research Engineer Mining Systems from CSIRO.

**Drilling Technologies Automation Monitoring** by Mr. Andrew Olsson, Research Engineer Mining Systems.

Andrew Olsson is a Senior Research Engineer at CSIRO Mineral Resources, where he develops hardware and software for sensing and automation in the Mining Systems Group. He has over 25

years of experience in the automation and electronic engineering domain.

After graduating, Andrew worked in the automation industry developing special purpose machines and control systems. He then ran his own electronic design and manufacturing business for 13 years designing hardware and software for industrial and automotive control and robotics. At CSIRO, Andrew works on projects developing and implementing new technologies for the exploration and mining industry.

He used his deep knowledge of drilling in his lecture. Andrew explained to the audience Remote Rig Monitoring, Drill Rod Handling, Drilling Monitoring - Sensor Sob, Percussive Drilling Optimization - "Sweet-Spot", Composite Drill Rods, Rock Fragmentation - Smart Blasting, Optical Fibre Sensing for Drill & Blast, 3D Shape Sensors and CSIRO SMART\*CUT Technology.

We invited the second of our guest lecturers Mr. Stephen Fraser to discuss the topic of **Knowledge from Data Using Self Organizing Maps**.

Stephen is a geologist/explorationist by training and inclination with data analysis and interpretation skills related to minerals exploration and mining. He has interests and capabilities in the areas of remote sensing and spectral analysis (satellite, aircraft, HyLogger<sup>®</sup>, PIMA & Face Mapper studies), geochemistry, airborne and down-hole geophysics, and in the display, interpretation and storage of spatially-located geoscientific data. He is currently developing data mining and visualization techniques for the integrated analysis of complex, spatially-located data sets for both exploration and mining purposes. Also, he is leading a project aimed at developing a geochemical down-hole logging tool for routine use by the minerals industry.

Stephen has authored or co-authored over 200 publications, which include refereed papers, conference proceedings and client-initiated research or consulting reports. He has presented at various university and industry short courses in the areas of remote sensing, geophysical interpretation and data analysis. He has also lectured various postgraduate and undergraduate classes, and co-supervised PhD, MSc and Honours students both nationally and internationally.

He explained to the audience how deeply he used mathematics in his job. It was impressive to the students to understand how their study is used in “real” job functions. His speech imparted knowledge regarding how we intelligently analyse and interpret the volumes of data we collect?. Discussions included

topics such as Clustering & Data Analysis, A Tool for Conceptualizing Data Processing Methods, an Introduction to Self-Organizing Maps, Analysis of Geoscience BC’s QUEST Stream & Lake Sediment Geochemical Database, U-Matrix & K-means2 (20 clusters), Surficial Geology vs Samples Coded by SOM-derived K-means (20 clusters), SOM on Voxel Volumes of Petrophysical Data resulting from Geophysical Inversion of Magnetic and Gravity Data and many other techniques relevant to the topic.

We are expecting to organise another event which will focus on “Spatial Thinking for a Spatially Enabled Smart City”. I am planning to organise this event before the end of this year.

# Newsletter Editor's Report



**DAVID RUSSELL**

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It has been my pleasure to act as Queensland Section Newsletter Editor this year.

I have enjoyed interacting with other committee members and IEEE members to bring the newsletters to publication. Working together we have published three newsletters in 2016 so far. I hope you have found the newsletters useful and enjoyable. In putting the newsletter together each quarter, I have learned a lot about IEEE and the events our various chapters and societies have organised. The Queensland Section is an active group which is reflected through the number of interesting articles which have been published.

To my mind the newsletters this year have served three purposes, namely:

- Highlight the events and activities which have engaged the IEEE community in Queensland.
- Act as an avenue to inform members of upcoming events and issues which are of interest to IEEE Queensland members.
- Provide a ready reference for the office bearers of the Section committee, chapters and societies.

I thank all of the people who have contributed content

to the newsletter this year.

I will be continuing as newsletter editor next year. Please consider contributing to the newsletter through your chapters and societies. I would like to see the newsletter continue to focus on notifying members of future events. This gives our members another avenue to find out what events have been scheduled which might be of interest to them.

Newsletters from this year and prior years are stored in the section's website [archives](#) and are accessible to all members.

If you have any comments or changes you would like to see in the newsletter, please let me know. I welcome your feedback.

Our website contains written [guidelines](#) to follow when making submissions to the newsletter. I strongly encourage you to follow these guidelines when submitting a report.

Finally, please feel free to circulate the newsletters to colleagues and friends who may be interested in the activities of IEEE.

# Membership Development Chair's Report



**YATEENDRA MISHRA**  
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In 2016, the total IEEE Membership number for our Queensland Section is 1106, which is down by around 3% from the last year (1144 in 2015). There is a noticeable increase in the student membership this year (around 42%) to 70 in 2016 from 49 in 2015, whereas the membership numbers for “Members” grade have slipped to 739 this year from 777 last year. This year, David A Abramson (Computer Society) was awarded an IEEE fellowship, increasing the numbers of fellows in the Queensland Section to two.

In 2016, the Queensland Section has actively continued to promote student activities and membership drive functions. All student branch chapters were active throughout the year in disseminating the importance of IEEE memberships at various avenues such as conferences, classes, industry based lectures and several student chapters at different universities in Queensland. Moreover, during mid-year, the members who had not renewed their IEEE membership until June, were encouraged to join and avail the benefits for 50% of the cost. Email promotion worked in our favour. There were a couple of members who raised concerns about problems they were facing while renewing their membership this year due to a website hiccup. This was eventually resolved from the IEEE

helpdesk. In addition, membership development advertising materials were ordered and used by our student chapter and affinity groups for promotions at several seminars and meetings.

Over the past 6 years, the total membership numbers in Queensland Section have stayed stable around 1100. However, the recent decline in the IEEE membership trend in Queensland may be due to slow economic growth in the mining and commodities industry in recent years.

Queensland Section will undertake a few strategic initiatives next year to improve membership retention such as:

- Roll out Membership Development initiatives to raise the awareness and visibility of IEEE.
- Convert the students to higher grade members to retain them.
- Improving coordination among several student chapters, young professionals and members to enhance active participation and retention of IEEE membership across the board.

# Professional Activities Chair's report



**ASSOCIATE PROFESSOR DIAN TJONDRONEGORO**  
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## Review of IEEE QLD Section Professional Activities 2016

This is the first term I have served as the Chair for Professional Activities.

This year, the IEEE R10 and Queensland Section have approved sponsorship for one activity, namely QUT BlueSky Forum. The Forum annually unites the expertise of academics, government, industry professionals and students to generate ideas and scope for innovative projects that help to shape new research and start ups.

The interactive forum combines panel keynotes, thematic workshop and plenary discussions to propose a suite of projects that will address the identified key challenges, and generate opportunities for emerging topics and themes. The forum was followed by a workshop with Meshed to bootstrap the innovations in the IoT community network. **The selected project proposal will be supported by [QUT BlueBox Accelerator Program](#)** (\$25k cash plus mentoring and other supports) to turbo-charge the ideas into tangible outcomes and foster new research and innovation opportunities.

For IEEE Professional activities: this brings together professionals for promoting an “innovation culture”. It will feature a “continuing professional education expo”, and book a table for IEEE to empower the participants with resources and pathways for their innovative career and projects.

This year, QUT Bluebox will sponsor the Accelerator Program (\$25k funding plus mentoring) to the selected project idea.

## Organiser

Chair: A/Prof. Dian Tjondronegoro.  
 Organising team: QUT Mobile Innovation Lab ([milab.com.au](http://milab.com.au)). The QUT Ubiquitous Computing and Multimedia Innovation (UMMI) Lab focuses on real-world research to deliver novel contributions on knowledge and socio-economic impacts in the fields of: “integrated intelligent sensing”, “machine learning analytics of multimedia data”, and “innovative apps on pervasive UI”. We actively collaborate with cross-disciplinary researchers and industry while conducting world-class research and teaching.

## Date

Wednesday 26 October 2016, 8am-12:30pm

## Venue

P419 (The Forum), P Block Level 4, 2 George Street, Brisbane  
 Queensland University of Technology (Gardens Point Campus)

## Participants

The event hosted 60+ IEEE and non-IEEE participants representing industry (AusAsia Health Innovation, Retire Australia, Newman Summer, BESST Engineering, Fulton Trotter Architects), government (BCC, AARNet), cross disciplinary researchers (QUT, UTS, CSIRO, Griffith, UQ, USyd, etc), and students across PhD and undergrad.

In addition, to help inspiring brave new ideas, we hosted a panel of multidisciplinary experts and world-class thought leaders from research, government and industry to lead the interactive discussions.

**Keynote Speakers:**

1. Professor Stuart White, Director of the Institute for Sustainable Futures, University of Technology Sydney
2. James Bangay, Managing Director and Founder, Fugro Roames
3. Cat Matson, Chief Digital Officer, City of Brisbane

**Theme Chairs:**

- **Prof. Laurie Buys** (IFE Infrastructure for Sustainable Communities), **Dr. Markus Rittenbruch** and **Dr. Rafael Gomez** (QUT School of Design) Sustainable and Creative Communities
- **Prof. Andry Rakotonirainy** (QUT Centre for Accident Research and Road Safety QLD), **Dr. Marc Miska** (QUT Smart Transport Research Centre) Safe and Smart Transport and Mobility
- **Prof. Stewart Trost** (QUT Institute for Health and Biomedical Innovation) and **Dr. Christhina Candido** (University of Sydney Indoor Environmental Quality Lab) Productivity and Wellbeing
- **Prof. Alistair Barros** (QUT Information Systems School), **Catherine Caruana-McManus** (Meshed) the Things Network Integration

**Activities**

- **Registration and demos** (breakfast served)
- **Welcome and Opening remarks** Prof. Tristan Perez, Intellisensing Leader, the Institute for Future Environments, QUT
- **Keynotes 1, 2 and Theme Chairs Insights**
- **Thematic Discussions**
- **Keynote 3 and Plenary discussions** (report from each theme)
- **Closing Remarks and Next Steps** Prof. Arun Sharma, Deputy Vice Chancellor (Research and Commercialisations) QUT
- **Community IoT Workshop** (run by Meshed IoT integrators)

**Expenditure**

The total expenditure for this activity is AUD\$3,690.

Financial support is from R10: USD500 and Queensland Section: USD300 (~\$1040AUD).



# Webmaster's Report



**DR. GHASSEM MOKHTARI**  
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I joined the IEEE Queensland Section as the Webmaster in October 2016. This report summarises my activities during this period.

Late in this year, I used a new platform to design a more attractive website for the IEEE Queensland Section. A Wordpress platform, provided by IEEE, is used to develop the new look for the website. The new website is more user-friendly with more functionality.

This website provides easy access for the users to navigate through the contents. Additionally, it looks more modern. Now, all the upcoming events for the

IEEE Queensland Section will be listed on the front page. Additionally, it is possible to post updates in the website which is good for users to know more about recent IEEE Queensland Section activities. Moreover, responsive web design is also utilised for the new website. In other words, the new website adjusts its size based on the size of the device such as a mobile phone or ipad.

Last but not least, IEEE Queensland Section now have [Facebook](#) and [LinkedIn](#) pages. These pages are regularly updated with new posts related to the IEEE events.

# Aerospace and Electronic Systems Society



**DR ROBERT KENNEDY**  
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## **Committee:**

Chair: Dr Robert Kennedy, Boeing Defence Australia  
Vice-Chair: Ken Morris, Air Services Australia

## **May 2016**

Gordon Young from Air Services Australia presented a lecture based around GLS (GPS based ILS), installed in Sydney. This was supported by our Vice-Chair Ken Morris.

ILS systems have been around for a long time, with basic ILS from WW2. ILS unfortunately does not allow for multiple approaches and require an ILS kit (glide path and localiser) at every runway end. GLS solves this.

## **Nov 2016**

Ken Morris of Air Services will host a lecture on the future of GBAS in Australia. This event will be held on Monday 28 November at Air Services offices, Brisbane Airport.

The 1 Day workshop on HF Over the Horizon Radar by Dr Joe Fabrizio of DSTG scheduled for Nov 2016 has been canceled due to lack of initial registra-

tions. Dr Fabrizio will be available as a Distinguished Lecturer for a lecture early in 2017. This includes HF passive radar, multipath driven geolocation, adaptive processing techniques and signal separation.

## **Radar 2018**

We are currently organising the AES Radar Conference that is coming back to Australia in 2018. The conference will host a number of delegates from industry and universities all over the world. The organising committee has been setup with Dr Vaughan Clarkson as the General Chair, Dr Robert Kennedy as the Financial Chair and Dr Gordon Fazier as the Technical Chair.

The Conference will be at the Brisbane Convention & Exhibition Centre in South Bank. The local IEEE Queensland section and Engineers Australia have committed to seed funding.

Please keep an eye out for emails and check our [website](#) for any updates and [vTools](#) for meetings.

# Computational Intelligence Society



**AMIN GHARIPOUR**  
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## Committee:

Chair: Amin Gharipour, Griffith University  
 Vice-chair: Andrew Lewis, Griffith University  
 Secretary: Zahra Jadidi, Griffith University  
 Treasurer: Alan Liew, Griffith University

Computational Intelligence Society Chapter has organized several successful technical activities in 2016. Our professional guest speakers were from different universities and industries, presenting current research areas and industry gaps. We had an audience of students and academics.

## 30 November - 2 December 2016

### DICTA 2016 conference

Computational Intelligence Society Chapter will be providing technical sponsorship of DICTA 2016 (Digital Image Computing: Techniques and Applications) conference that will be held on the Gold Coast.

## September 2016

**Title:** ‘What is Spiral Optimization Algorithm?’

**Speaker:** Dr Kenichi Tamura from Tokyo Metropolitan University

**Abstract:** In recent years, nature-inspired metaheuristic algorithms have been attracting more attention in recognition of their versatility and conception. With this as background, the spiral optimization (SPO) algorithm, a metaheuristic inspired by spiral phenomena in nature, was proposed by Tamura and Yasuda to solve continuous optimization problems. In this seminar, motivation, modelling and theory on SPO algorithm were introduced.

## July 2016

**Title:** ‘Some Progress in Robotic Vision’

**Speaker:** Professor Peter Corke, Professor of Robotic Vision at QUT, and Director of the ARC Centre of Excellence for Robotic Vision.

**Abstract:** This talk defined and motivated the problem of robotic vision and discussed some recent progress at the Australian Centre for Robotic Vision. This includes component technologies such as deep learning for computer vision and motion, middleware, and end-to-end systems for applications such as agriculture, environmental remediation and asset inspection.

## Jun 2016

**Title:** ‘On Cyber Conflict, Industrial Control System Security, and Feature Selection’

**Speaker:** Dr. Ernest Foo, an active researcher in information and network security. He has been responsible for the design and development of the QUT SCADA security research laboratory.

**Abstract:** Industrial control systems have been moving from isolated communications networks to IT networks connected to corporate networks, making it probable that these devices are being exposed to the Internet. Many industrial control systems have been designed with poor or little security features, making them vulnerable to potential attack. This talk discussed recent incidents of successful cyber attacks against critical infrastructure that are changing the landscape of modern conflict. In addition, the talk discussed recent research that identifies and analyses several feature sets that have been used in studies related to industrial control system communication protocols in order to propose a well-defined initial feature set.

**May 2016****Title:** ‘Emerging Technologies for Smart Cities’**Speaker:** Professor Simon Kaplan, CEO of [ui!] Australia, a German-based smart city company that has recently set up in Australia.**Abstract:** Increasing urbanisation is resulting in cities struggling to meet the needs of their rapidly-growing populations. At the same time there is increasing pressure to reduce the carbon footprint and energy use of cities, for both economic and climate-change reasons, and a need to do ‘more with less’ in economically difficult times. Unsurprisingly, many cities are turning to technology to solve this hydra-headed problem. Smart City technologies broadly have 3 parts: 1) Sensors, to gather more data at finer granularity more frequently; 2) Analytics, to use the data from the sensors, fused with existing data stores within the city, to manage resources better, reduce resource load, and improve services; and 3) Access, to allow residents of the city to track and participate.**Title:** ‘AI: The Future of Travel’**Speaker:** Dr Kelvin Ross, the a founder of K. J. Ross & Associates, currently employing over 100 specialist software testing consultants, and a NATA accredited testing laboratory.**Abstract:** Recently, Barry Diller (chairman and senior executive of Expedia) forecast that AI will be travel’s next big thing. Technology disruption from data science and machine learning will likely have an impact on many different industries and roles. As foretold by Diller, an area that is likely to change dramatically is the role of the travel agent. As more and more consumers book their travel online, how may online travel agencies evolve to utilize data science and machine learning to provide greater support to the traveler? Dr Kelvin Ross is founder of SkiDreamz.com, a tech startup that is investigating AI and machine learning to provide travel planning support normally provided by a travel agent. In this presentation, Kelvin explained the activities of a traveller, and at what stages data can be used to optimize the experience. He discussed a number of considerations:

- Why would AI be a benefit to the traveller and the travel agent?
- How machine learning algorithms can be applied

to these activities?

- What access to data would further optimize the experience?
- What human interaction is involved to enhance the customer experience?

**Title:** ‘Big Data Fusion for Mining e-Health Data’**Speaker:** A/Prof Xue Li, DKE Division, School of Information Technology & Electrical Engineering, UQ**Abstract:** In medical research and healthcare, there are many large data sets which are related to each other in terms of the clinical trials, medical research publications, Electronic Health Records (EHR), annual health check-up records, and patient bed-side monitoring data. In this talk, he discussed case studies and experiments on how they could connect the relevant medical and health data sets together to rank the most influential treatments for diseases, to predict the health states for ageing individuals, or to predict the mortality of hospital patients. A graph-based data fusion approach was introduced to represent the different types of relationships among data items and learn from data for predictions.**March 2016****Title:** ‘Social Media & Social Network Data Analytics’**Speaker:** A/Prof Xue Li, DKE Division, School of Information Technology & Electrical Engineering, UQ**Abstract:** Social media and networks are a popular place for people to express their opinions about consumer products, to organize or initiate social events, or to spread news. Some questions would be asked to understand the social media and social networks: how can we detect and predict the emerging sensitive events? How can we predict the propagation patterns of online micro-blogs? How can we understand peoples opinions about a current issue, a new product, or an important event? This talk reported recent research work on the social media and social networks data mining. A few application systems were reported to answer the above questions.**February 2016****Title:** ‘Big Data Analytics’**Speaker:** A/Prof Xue Li, DKE Division, School of Information Technology & Electrical Engineering, UQ**Abstract:** A stunning story on a successful prediction

of 2012 USA Presidential Election with 100% accuracy by Mr Nate Silver has shown that the challenges are not just to invent new algorithms to deal with large, noisy, and uncertain data, but to link the multiple relevant data sources, structured or unstructured, together to make effective recommendations. Information is now available everywhere from the Web, sensor networks, social networks, or the proprietary databases. Consequently, making effective and efficient recommendations based on Big Data is becoming a significant and urgent challenge because of complex, fast changing relationships between data objects. Therefore, the question is: how can we make effective recommendations based on the relevant information collected

from high-speed, time-variant, high-dimensional, and distributed data sources in the current changing and interconnected world? This talk introduced current research activities in the big data analytics and research group led by Dr Xue Li and provided insight into the issues in the current research.

#### **Acknowledgement**

I want to acknowledge Dr Andrew Lewis (Vice-chair), Associate Professor Alan Liew (Treasurer) and Dr Zahra Jadidi (CIS Secretary) for their efforts in organising these productive events in 2016. IEEE CIS has another event planned in November 2016.

# Computer Society Chapter



**GARRY EINICKE**  
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## **Committee:**

Former Chair: Tomasz Bednarz  
Former Vice-chair: Ruslan Puscasu  
Former Secretary: Mike Robinson

The Computer Society Chapter held the following two activities in 2016.

**April 20th** A Professional Seminar on “Responsive Web Design (RWD)” was presented by Mike Robinson at the Central Queensland University. Mike described a Javascript framework (known as Jrwd) for achieving responsive web design. The framework eliminates style-sheet CSS3 media queries completely, but simulates them exactly and efficiently. It works on all major browsers and operating systems, and has been tested on a variety of mobile devices. The framework can be used to create new RWD sites or add RWD to existing sites. It provides access to a web page’s HTML mark-up and the CSS selectors in its style sheets, allowing these resources to be manipulated to facilitate RWD effects such as dynamic DOM events, turning HTML elements on and off, changing font sizes, altering page layout (flexbox), menu control and selection, and many other effects through altering CSS selector properties. Jrwd saves time and money by dispensing with CSS3 media queries and their associated logic completely, while delivering minimal-sized web pages. Thirty-six people attended the seminar including six IEEE Members.

**October 18th** A Technical Seminar on “High Order Filtering of 3D Point Clouds” was provided by Garry Einicke at the Brisbane Convention and Exhibition Centre. 3D point cloud models of building interiors and streetscapes are routinely constructed from LIDAR measurements. However, LIDAR measurements are adversely affected by dust, rain and fog, which can yield imprecise point cloud models. The seminar outlined a high order signal model which enables an optimal linear filter to be specified. It was shown that a minimum residual error variance criterion may be used to select the model parameters. Shiploader data was presented which demonstrated that the proposed method can outperform conventional Kalman and Hidden Markov Model filtering approaches at low signal-to-noise ratios. Nine IEEE Members from research and industry organisations attended the seminar.

## **Concluding Remarks**

Although university Information Technology courses are very popular, it continues to be difficult to recruit Computer Society Student Branches and Committee Members. It would be worthwhile to conduct targeted membership drives in 2017.

# Control Systems/Robotics and Automation Societies



**ASSOC. PROFESSOR LUIS MEJIAS**  
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## **Committee:**

Chair: Assoc. Professor Luis Mejias (Queensland University of Technology)

Vice-chair: Navinda Kottege (CSIRO)

The CS/RA Society chapter had four events this year. These events included two meet-up meetings with the Brisbane Robotics Interest Group and two distinguished lectures. The meetings covered contemporary topics ranging from robotics, automation, technology to start-ups and entrepreneurship. We had a number of local and international speakers from Georgia Tech. and Oxford University.

The two distinguished lectures were from Professor Ronald Arkin (Georgia Tech) and Professor. Paul Newman (Oxford University). The talk from Professor. Arkin covered an interesting topic on how biological behaviours can be replicated in robots so these systems can obtain the ability to evade (collision avoidance) and to swarm (cooperative robotics behaviours). Professor.

Newman's lecture touched on the practical implications and competencies needed to build intelligent autonomous cars.

Additionally, we had two meet-up meetings in Brisbane where the robotics community and professionals had the chance to exchange ideas and hear from professionals about start-up companies, entrepreneurship and new robotics technologies.

Thanks to all the members of the CS/RA chapter. Next year, I will be taking a period of extended leave, therefore we will have a change in roles for 2017. I will take the role of vice-chair and Navinda will step into the Chair role.

# Engineering in Medicine and Biology Society



**MOHAN KARUNANITHI**  
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## Committee:

Chair: Mohan Karunanithi, CSIRO

Vice-chair: Qing Zhang, CSIRO

Secretary: Yan Li, University of Southern Queensland

Program Officer: Ghassem Mokhtari

In 2016, the IEEE QLD EMB chapter committee was formed with four key members listed above.

In the first half of the year the Chapter planned events that focused on three areas: (i) Aged care innovation (ii) Big data and (iii) Career development. The chapter was quite productive in organising both national and international speakers: two in aged care and two in big data. As planned, the chapter will have their last event on career development for up and coming biomedical engineers in three major Queensland universities.

## Activities

Although, the chapter looked at conducting two events for the year, we exceeded our plan by having five varied events as outlined below:

- **10 June 2016: Artificial Intelligence And Big Data For Aged Care**  
IEEE Qld EMBS invited two speakers from academia and industry to share their visions on Artificial Intelligence applications and Big Data analytics in the aged care environment.
- **27 June 2016: Sensorless Sensing: Wireless Networks As Human Context Sensors**  
IEEE QLD EMBS, together with CSIRO, invited a researcher from the University of Utah to share their cutting edge research results on wireless networks as human context sensors.
- **15 July 2016: D4health: Data Driven Decisions For Digital Health & Care**  
IEEE QLD EMBS invited a researcher from

the Austrian Institute of Technology to talk on healthcare data processing to support a clinical decision support system.

- **22 August 2016: Digital Biomarkers As Outcome Measures**  
IEEE QLD EMBS invited a researcher from Oregon Health and Science University to talk on Digital Biomarkers as outcome measures.
  - **11 Nov 2016: Career Development For Engineering In Medicine And Biology**  
This was the final event for 2016 and was the most successful event for the Chapter in this year. It was a joint event with IEEE QUT Student chapter. The main objective was to target final graduate Biomedical Engineering students to set direction, and bring awareness to students seeking biomedical engineering jobs in Australia and Queensland. The event was sponsored by the IEEE QLD Section and Australian eHealth Research Centre (AeHRC), CSIRO. This was mainly due to the lack of promotion in biomedical engineering jobs despite it being a rapidly growing industry.
- A number of varied speakers with different perspectives towards career development in Biomedical Engineering were invited to present at the Career Development event as outlined below:
- **Welcome by QLD IEEE EMBC Society Chair (Dr. Mohan Karunanithi)**



- **Biomedical engineering journey in the medical industry** (Mr. Vidur Lal, Senior Project Manager, Philips Health Care)
- **Biomedical engineering career from research and development perspective** (Dr. Shaun Gregory, Technical Director, ICET Lab, University of Queensland and The Prince Charles Hospital)
- **HR presentation** (Ms Laurie Mackenzie, CSIRO HR Officer)
- **Post-doc journey from student to research scientist in health engineering** (Dr. Ying Xia, CSIRO)

- **Post-doc journey from student to research scientist in health engineering** (Dr. Yang Xie, CSIRO).

The career development event was well received and generated a number of questions by students. As a key annually planned event of the IEEE Qld EMB in the past, the resumption of this event was considered important. We recommend future chairs continue this event annually to grow the discipline and career pathway for the biomedical engineers.

In summary, the IEEE QLD EMB chapter was very proactive and conducted five prominent events for the year 2016. The events were quite diverse in the biomedical engineering field.

# Microwave Theory and Techniques/Antennas and Propagation Societies



**KONSTANTY BIALKOWSKI**  
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## Committee:

Chair: Konstanty Bialkowski, University of Queensland

Vice-chair: Antony Lui, The University of Queensland

Vice-chair: Morteza Shahpari, Griffith University

Secretary: Mostafa Shabani

In 2016, the MTT/AP joint chapter was pleased to host nine events for the calendar year. We had a slow start to the year but overall we managed an active technical program.

This year our technical program involved industry speakers, international researchers and IEEE distinguished lecturers (DL).

Our DL speakers this year were all from the Antennas and Propagation Society (APS) DL program. Given the considerable distances to get to Australia from Europe and the USA - and to ensure efficient usage of the DL program, we scheduled the DL visits with other chapters around Australia. Most DLs travelled to five chapters in Australia.

Our first DL speaker was Prof Ari Sihvola from Finland, in October this year. He presented a talk about metamaterials. Through the use of mixtures, it is possible to create very unusual mediums with exotic electrical properties. The only requirement is that the mixtures need to have a feature size proportional to the wavelength. Due to this the majority of this work is for higher frequencies.

Our second DL speaker was Dr Ed Miller from the USA. Ed Miller has first-hand knowledge of the history of computational electromagnetics and participates in projects in so many areas of EM. At one stage in his

career, he worked at Lawrence Livermore Laboratories, which developed 'numerical electromagnetics code' (also known as NEC). He presented two seminars over two days as part of his trip to Brisbane. His first seminar was on the verification and validation of electromagnetic simulation software, and his second seminar was on model-based parameter estimation.

The last DL speaker was to be Prof Andrea Massa from Trento in Italy. He presented on "Inverse Problems in Electromagnetics". At the time of writing this report, the seminar was yet to happen.

The remaining speakers of the year were local industry and international researchers:

- Dr Andrew Horsley from Switzerland, presented on "Widefield Microwave Imaging using Atoms and Diamond NV Centres". This seminar offered a way to sense electrical and magnetic fields with incredible spatial resolutions by using fixed volumes of atom cells.
- Dr Rowan Gilmore from EM Solutions in Brisbane presented on "Innovation in very high-speed radio communications - it's not all about the NBN!". This seminar talked about a 10 Gigabit radio backhaul system developed here in Brisbane, which operates over several

kilometres. It also happens to be the world's fastest wireless modem.

- Dr Thomas Fickenscher from Hamburg in Germany presented on the interaction between radio signals and wind turbines. Unlike normal scattering objects, the rotating rotors have the potential to add frequency shifts to the signals.
- Alex Crawford from Telstra, presented "Network Engineering: Transitioning from Student to Engineering Professional". Topics in this seminar included Telstra the company, as well as how students can expect to transition from being a student to an engineering professional.

All of the seminars were well received and with good attendance, with a good mixture of IEEE members and guests. The MTT/AP joint chapter committee wishes to thank everyone for their support of our events during the year, and we look forward to seeing you at more events in 2016.

### **Seminars and Workshops 2016**

We encourage all of the members to regularly check the chapter website for future notices and announcements. The chapter is found [here](#).

In closing, I would like to thank the MTT/AP committee for 2016 for their support in running the chapter and in helping to organise this nice variety of events for our chapter.

# Oceanic Engineering Society Australian Chapter



**NAVINDA KOTTEGE**  
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The IEEE Oceanic Engineering Society Australian Chapter organized the following three events during the year. The first was a jointly sponsored Technical Meeting with the South Australian IEEE Section at Flinders University. It was presented by Prof. Oleg Yakimento from US-NPS titled “Unmanned Vehicles - State of the Art and Future Challenges”. Approximately 40 people attended. The second event was a jointly sponsored Technical Meeting at James Cook University with Northern Australia IEEE Section in October by Dr James Whinney titled “Dredge Monitoring in Australia”. A third Technical Meeting was jointly sponsored with the Victorian IEEE Section

and the University of Melbourne Student Branch in November by Prof Mal Heron and titled “HF Ocean Radar: From Down-Under to Europe”.

A proposal for OES Australia Chapter to be Technical Co-Sponsor for EA Coasts and Ports Conference in June 2017 was approved by OES AdComm in March 2016 with approval for a student poster competition funded by OES. An MOU between IEEE and Engineers Australia was approved in November 2016. The activity had to be withdrawn because the lead time was considered too short.

# Power and Energy & Dielectric and Electrical Insulation Societies



**DR. NILESH MODI**  
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**Committee:** Chair: Dr Nilesh Modi, AEMO  
 Vice-chair: Rahul Sharma, University of Queensland  
 Secretary: David Batterham

## Highlights of 2016

1. Organised 13 events: 10 technical seminars, two distinguished lectures and one workshop.
2. The PES chapter was recognized as one of the High Performing Chapters under the High Performing Chapters Programs in 2015. 89 chapters received funding for this award. Queensland was placed 6th in Region 10 in terms of the award received.
3. The PES chapter was recognised as one of the Runners-up for the Outstanding Large Chapter award for the 2015 program year. Queensland was in 5th place in the overall list of winning chapters. This is the sixth consecutive year that the PES Queensland chapter has won this award.
4. The PES chapter awarded student travel prizes for two student members to attend and present papers at the 2016 IEEE PES General Meeting, held in Boston, MA, USA. Mr. Amit Dhoke and Ms Juliana Barbosa Nunes from the University of Queensland were the winners of the award. Each winner received a cheque for \$1000.
5. The PES chapter won funding from an IEEE PES Member-Driven Initiatives campaign for a project “1 Day Workshop – Brisbane as a Smart City, The Role of Smart Grids” to be held in early December 2016.
6. The PES chapter Secretary attended the 2016 Region 10 PES Chapter Chairs meeting in Melbourne in November.
7. The PES chapter technically co-sponsored the annual Australasian Universities Power Engineering Conference.

## Technical Seminars:

1. “Planning in the Real World” by Prof Simon Bartlett from the University of Queensland.
2. “Research Activity Required for Future Energy Supply” by Dr Bevan Holcombe from Elevare Energy.
3. “Large Scale Renewable Generation for Queensland” by Andrew Deme from Ergon.
4. “Power Semiconductor Devices: Key Enabling Technology for Future Power Electronics Systems” by Dr Leo Lorenz from Infineon Technologies, Germany.
5. “Helping Grid-Integration of Intermittent Renewable Energy Sources with Intelligent Loads” by Prof Prabir Barooah from the University of Florida, USA.
6. “Security Assessment due to Increased Wind Generation in a Complex Power Grid” by Nahid-Al-Masood, the University of Queensland.
7. “Challenges and Opportunities in Distribution Network Planning” by Daniel Eghbal from Energex.
8. “Innovative transformer manufacturing in Australia”, by Jon Retford, General Manager,

Distribution Transformer Business Unit, Wilson Transformer Company, Australia.

9. IEEE meet and greet event at Griffith University.
10. “Industry Project From a Student’s Perspective”, by Reza Akbarzadeh Sohi, Griffith University.

#### **Distinguished Lecture:**

1. The PES chapter organised, combined with CIGRE NGN, an IEEE Distinguished Lecture event “Wind Generation and their Grid Connection” by Prof Janaka Ekanayake from the University of Peradeniya, Sri Lanka.
2. The PES chapter organised an IEEE Distinguished Lecture event “Managing Uncertainties of the Future Grid” by Jay Giri, Director of Power Systems Technology and Strategic Initiatives GE Grid Software Solutions, USA.

#### **PES Outstanding Engineer Award 2016**

Professor Peter Wolfs from the School of Engineering and Technology, CQ University was named outstanding engineer for 2016.

#### **PES Outstanding Volunteer Award 2016**

Nominations were called for the PES outstanding volunteer award. The results will be announced in January 2017.

#### **Australasian Universities Power Engineering Conference (AUPEC)-2016**

AUPEC 2016 was held at the University of Queensland during 25-28 September 2016. The conference was well attended by a mix of industry and academia with total of 150+ delegates. This conference was supported by power industry, CIGRE, IEEE and Australian Power Institute (API). IEEE PES was the technical co-sponsor of the conference. More than 100 research articles were presented in the conference and papers will be published in IEEE Xplore.

On the first day, Prof Tapan Saha welcomed the delegates on behalf of the AUPEC local organising committee. The conference was opened by Prof Stuart Crozier from UQ and Terry Effeney, Interim CEO, Energy Queensland from the local power industry. Prof Crozier welcomed the delegates on behalf of UQ. Mr. Effeney discussed the importance of changing power system dynamics and the need for innovation. He presented “2027 outlook of the power system of the future where the grid is going to be more digital, self-monitoring and self-healing” .

The key note speech was delivered by Prof. Miroslav Begovic from Texas A&M University, USA. He is the Past President of IEEE Power & Energy Society. He focused on the role of renewables and the effect of solar PV on the distribution system. He also touched on the importance of Synchrophasor in managing system security in the USA.

The second day included a panel session on “Energy Storage and PV” which was moderated by Prof. Peter Wolfs of Central Queensland University. The panelists were Mr. Peter Price (Energy Queensland), Mr. Paul Liddell (Redback Technologies) and Prof Simon Bartlett (UQ). The panel discussed the future of battery technologies, the need for innovation and customer sentiments around use of batteries with PV. In the afternoon, the poster session and GHD-CIGRE NGN innovation poster competition was arranged, which attracted participants from industry and academia. Dr Geoff Garett, Queensland Chief Scientist was the speaker in the prize award ceremony and highlighted the importance of innovation for the power industry. Prizes were given by Mr. David Bones – CIGRE NGN Innovation Awards, Mr. Mike Griffin – API Travel Awards & Mr. Ed Wilson – Wilsons Transformer Company Awards. There was an Industry Forum: “Is the Future of the Power Industry in Our Hands?” and the Panel Moderator was Mr. Nic Pappapetros from Ergon Energy and Panel members were Mr. Gerard Reiter & Mr. Ed Wilson (API Board members), Mr. Matthew White, Mr. Brian Joseph & Ms. Dan Tang were API bursary holders, & Ms. Emma Rodgers (NGN member).

The conference dinner was held at Shore restaurant, Southbank. During the dinner 20+ travel and registration awards were presented by Prof Tapan Saha, General Chair of AUPEC 2016. Dr Nilesh Modi, PES Queensland Chapter Chair presented the PES Queensland Outstanding Engineer award to Prof. Simon Bartlett (UQ). Two technical site visits were

organised on Wednesday afternoon at University of Queensland Gatton Solar Research Facility and Noja Power and Energex Battery Trial. API Bursary award function, API Board Meeting and ACPE Professors meeting along with API-ACPE Professor dinner was also held during the AUPEC conference.

# Signal Processing and Communication Societies

## Chapter



**PROFESSOR ANDREW BRADLEY**

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### **Committee:**

Chair: Professor Andrew Bradley (The University of Queensland)

The ever-enjoyable First Tuesday Journal Paper Club (1TJPC) meetings, which were initiated by Vaughan Clarkson in 2013, have continued throughout 2016. In these meetings, the participants discuss a highly cited, ‘top ten’ or major-prize-winning article in an SPS or ComSoc journal. In this way, it is hoped 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. In 2016 there were five regular Journal Paper Club meetings at a variety of venues, plus one IEEE Day Special Edition meeting held in October.

We hosted one IEEE Distinguished Lecturer: Professor Ben Othman from the University of Paris gave a presentation on “DoS in VANETs an issue or a fatality?” at Queensland University of Technology.

We also hosted two special guest seminars with our friends at the Brisbane Convention and Exhibition Centre (BCEC):

- Prof. Ba-Ngu Vo from Curtin University presented a one-hour seminar entitled “Estimation and Control in a Multi-object System”, and
- Dr Marco Martorella from the University of Pisa presented a seminar entitled “Three-Dimensional Reconstruction of Non-cooperative Targets via Multi-static Interferometric ISAR” co-sponsored by Queensland Aerospace & Electronic Systems Chapter.

We are grateful to the BCEC for providing such a high quality and central location for these seminars.



# Society on Social Implications of Technology



**SAMULI HAATAJA**  
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## **Committee:**

Chair: Lyria Bennett-Moses

Vice-chair: Kieran Tranter

Secretary/Treasurer: Michael Rigby

IEEE Queensland Section representative: Samuli Haataja

## **Introduction**

The Queensland section of SSIT Australia continued its activities in 2016 with the aim of increasing SSIT's presence and membership in Queensland. SSIT focuses on the impact of technology on society, including both positive and negative effects, the impact of society on the engineering profession, the history of the societal aspects of electrotechnology, and professional, social and economic responsibility in the practice of engineering and its related technology. In Queensland in 2016, we organised three events in the form of public lectures and seminars touching on a range of ethical, social and legal issues raised by technology.

## **Major Activities for 2016**

On 11 March, as part of SSIT's Distinguished Lecturer Program, Professor Ronald Arkin from Georgia Institute of Technology gave a lecture on robot deception and its ethical implications. This event

was co-hosted with the Control Systems/Robotics and Automation (CS/RAS) chapter.

As part of IEEE Day 2016 on 4 October, we hosted a public lecture given by Professor Charles Lawson from Griffith Law School, Griffith University. This lecture, titled "Keeping the human perspective in technology: Plant names and metadata structures", explored the issues surrounding the naming of orchids. This event was co-hosted with the Law Futures Centre, Griffith Law School.

On 16 October, at the Alternative Technology Association Electric Vehicle Expo, Associate Professor Kieran Tranter gave a seminar on the legal issues surrounding driverless vehicles at the Queensland Museum, Cobb & Co Campus, Toowoomba. The seminar was to 80 people and was also reported on the local Channel 7 news.

# Women in Engineering



**MARIE-LUISE WILLE**  
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## Committee:

Chair: Marie-Luise Wille

Vice-chair: Negareh Ghasemi

Secretary: Alexandra Posoldova

## Introduction

The new Women in Engineering QLD committee organised a variety of events throughout 2016 with the aim to recruit new members and to inspire and encourage women to pursue careers in STEM fields.

## Activities

In 2015 the WIE Affinity Group organised four major events: one information session, two seminars and one industry facility tour.

Early in the year we started with an IEEE WIE promotion event at Queensland University of Technology. The event was well received and facilitated for a vibrant interaction and we received four new membership applications.

In July, together with the IEEE QUT Student Branch we had a stall at the QUT open day, a university information day for year 12 students, and we had a great time to promote and advertise IEEE.

In August, WIE held a lunch-bag seminar with railway engineer Jane Copperthwaite, who shared her exciting journey from the UK to Australia in railway signalling. Within a casual BYO lunch environment, she gave a very inspiring and joyful presentation about her passion in railways and what it takes to make our train rides safe, how to avoid collisions and control thousands of trains throughout the country and city networks.

In September, the WIE QLD committee organised an industry facility tour to the CSIRO Queensland Centre for Advanced Technologies (QCAT). Thanks to the support fund grant of US\$200 from WIE R10, the WIE QLD committee could provide catering and transport for the 14 participants to and from QCAT. This event aimed to encourage female engineering graduate students to visit and interact with Australia's largest research and development institution CSIRO. At CSIRO we were welcomed by Garry Einicke and Anna Littleboy, Senior Research Project Officer a QCAT and we enjoyed some afternoon tea while listening to Anna and her CSIRO story. We were also able to visit the Remote Mining Centre with Craig James, where we could experience 360 virtual reality glasses, followed by the navigation lab with John Malos. Sevda Dehkhoda gave us an insight about her career as a rock scientist and her research about rock/cutter interaction and rock failure. To conclude the event, Garry Einicke guided us around the CSIRO site, where drones and robots and auto pilot vehicles were built and tested.

The event was well received by all participants and it was a great experience to get such a close up look into CSIRO QCAT.

In October, the WIE committee invited Dr Lucy Cameron, a Senior Research Consultant at Data61, to give a presentation about CSIRO's Data61. The seminar was held at the Institute of Health and Biomedical Innovation and 20 interested researchers (student and staff members) attended the event. Dr Cameron gave a very interesting overview of the

different projects in which Data61 is involved, such as data-mining, data-mapping, and health management, just to name a few. Data61 aims to assist researchers and institutions to define their path to a data-driven future.

### **Conclusion**

We concluded a very successful 2016 year with a good mix of events and also a few new member recruitments.

I am very grateful to be re-elected as Chair for the 2017 WIE committee and I look forward to an exciting new year with my team Alexandra (Vice-Chair), Negareh (Secretary), and Hanxiao (Treasurer).

Don't forget to like the IEEE Women in Engineering Queensland [Facebook page!](#)

# Young Professionals Program



**ALEXANDRA POSOLDOVA**  
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## Committee:

Chair: Alexandra Posoldova

Vice-chair: Reuben Peterkin

Secretary: Rob Makaremi

Treasurer: Hamid Moghadam

## Introduction

Young Professionals chapter is a vibrant group of students just before their graduation and graduates entering their professional life. This year, we organized six events, with the second half of them dedicated to startup related topics. We were successful in winning two support grants from R10 Young Professionals and R10 Power Engineering Society.

## Activities

The first event we organized focused on leadership skills. It is not surprising that engineers make great leaders. Engineers train themselves to be analytical and detail oriented, and have strong numeracy skills. While being cautious at times, they take calculated risks with pragmatic outlooks. Moreover, their reductionistic approach to problems enables them to perform accurate root cause analysis. The speaker of this event, Phoebe Tee, is a PMP and PRINCE2 certified project manager with more than 9 years experience in Government, Enterprise Resource Planning (ERP), cutting edge technology, telecommunication and software design.

We followed with an event on a burning topic, big data, called “All you need to know about Big Data” presented by Professor Xue Li who explained why Big Data is such a big deal. He is honoured as one of “the most powerful people in Australia” on Big Data by the Financial Review - the Power Issue 2015. He is the Winner of the Microsoft Start Up Q Award 2014

and the Winner of the Best use of Open Data QLD Premiers Awards for Open Data 2014. We were able to attract a “big” audience, mainly students curious about this topic.

Another engineering related event was held in September in collaboration with Engineers Australia. The topic of this event was “Challenges and Opportunities in Distribution Network Planning” presented by Daniel Eghbal, who is a Future Network Strategy Engineer at Energex and an adjunct research fellow at the School of ITEE, The University of Queensland. This event utilised funds from R10 Power Engineering Society and we attracted lot of professional members.

The rest of the year was dedicated to series of three startup events. This series of events was financially supported by R10 Young Professionals. Money was spent for catering purposes. All the events were held at River City Labs co-working space, which kindly sponsored the venue hire.

The first event featured a live broadcast from Silicon Valley, which we brought to our members in collaboration with liveh2h.com. This broadcast consisted of a 12 week series targeting different aspects of startup businesses. Silicon Valley experts targeted topics ranging from legal formation, finding a target market, determining a business model, advanced sales strategies, building a team, pursuing venture capital investment, and much more.

The second event featured Ed Horwood as speaker. Ed is a successful entrepreneur and experienced startupist. He studied a MBA at Bond University and in 2014 won Bond University Accelerator Program with his company [service.com.au](http://service.com.au). Currently, he is scaling another of his businesses, MyShipper, globally. Ed shared his journey and explained what it takes to kick start and scale your startup idea.

The third event of this series and last event of this year had two speakers. The first speaker, Cole Wilkinson, described the process of funding business and addressed issues of how to protect the business when more owners and investors are involved. Wayne

Rabnott spoke about business ideas and how brilliant ideas can be undermined or come from an inexperienced person. Between presentations, attendees networked with each other and shared their startup ideas and experiences.

### **Conclusion**

It has been an exciting year for Young Professionals. We organized six events, received two grants and collaborated with three different organizations like Engineers Australia, River City Labs and liveh2h. We look forward to next year and will organise more events on topics that are of interest to our members.

# PES Travel Award Winner's Report #1

## IEEE PES Travel Award USA Experience

It was a great honour for me to win IEEE Queensland Section Power and Energy Society Chapter Travel Award to attend the IEEE Power and Energy Society General Meeting (PES GM) 2016 and other technical visits.

This travel involved:

1. Attendance and presentation at the biggest power and energy systems international conference (called IEEE PES GM 2016). IEEE PES GM is attended by 3500 attendees from most of the leading academic and industry research organisations from all over the world. It was a great opportunity for me to meet, discuss my research and collaborate with leading researchers in my field and other PhD students.
2. A visit to an industry called Solectria - A Yaskawa Company which manufactures power electronics devices for solar applications, in particular for monitoring and fault detection. Understanding a manufacturing process and gaining insight into the design of devices will help me to plan my experiments.
3. Fraunhofer is one of the biggest Research and Development Institutes for solar energy systems. Visiting their PV testing lab and models for fault detection and forecasting was a great learning for me which will enhance my research skills for modelling systems and expected outcomes.
4. A visit to the University of California San Diego was a useful and important learning regarding fire detection in solar panels. They have a solar resource assessment and forecasting laboratory with fire detection facility which has given me insight for further experiments planned at UQ.

Attending the conference helped me to network with other scholars and to improve my visibility in academic circles and with researchers in the industry. By attending presentations at the conference, I found there is reasonable improvement to be gained in my own skills and knowledge for my research field. Finally, networking with specialists in my area of research enabled me make contacts and develop future career opportunities.

Industry visits have assisted me to reinforce the theoretical knowledge that I have acquired through literature review. A technical visit to UC San Diego Solar Resource Assessment and Forecasting Laboratory has allowed me to create a connection with their research group. Overall, these visits will greatly benefit me in my professional development and in initiating collaborations with our university groups working on solar energy.

This experience will be of great benefit to me as I planned it well to get the best out of it. Definitely, it will help me to gain assistance for research from experienced people in my research area. Also, people I met at the conference are keen to work with me which may help to publish research outcomes together. Industrial visits at Solectria and Fraunhofer were awesome experiences for me where I met with experienced scientists and had good discussions about my research. Similarly, during my visit at California University I gave presentations which included a UQ overview and my research. This was a good platform for me to represent UQ. As a result, I have been advised to review a paper in one of the renowned journals in solar energy. Overall the visit made me more confident towards my academic, personal and future potential which will definitely open the doors for industrial placement or

post-doctoral opportunities.

Finally, my heart-felt gratitude and thanks to IEEE Queensland Section - Power and Energy Society Chapter for the travel award.

With best regards,  
Amit Dhoke  
PhD Candidate  
Power and Energy Systems Research Division  
The University of Queensland  
Brisbane, Australia

# PES Travel Award Winner's Report #2

## IEEE PES GM 2016 Report

I was very pleased to receive the IEEE Queensland Section Power and Energy Society Chapter Travel Award to attend the IEEE Power and Energy Society General Meeting (PES GM) 2016. The award helped me a lot with the expenses of the trip, enabling my participation at the conference given the high costs with travelling to the United States. The conference was held from 17 July to 26 July 2016 in the Sheraton Boston Hotel, Boston, Massachusetts. My paper "Stochastic Generation and Transmission Planning Considering Future Renewable and Gas Opportunities in Queensland, Australia" was selected to be presented in a poster session on 17 July. Additionally, on 18 July, I attended a poster competition, where 800 posters competed for the best poster content e-presentation.

It was a great opportunity to attend an international conference of such a level, with more than 2,500 papers submitted and attended by people from both academia and industry from all over the world. I had the opportunity to interact with authors and got some feedback from them which will be helpful to my future research. I attended several panels, where

authors and professors shared their knowledge about modelling and planning and presented future trends. In addition, plenary sessions were also useful in order to show both what has been done in my research area as well as the challenges faced by researchers for the development of their research. Overall, my participation in the conference was very positive. It was a good opportunity to understand the research of some authors in the same area as well as share ideas and challenges with some of them.

Finally, I would like to thank again IEEE Queensland Section - Power and Energy Society Chapter for the opportunity given to me to participate at IEEE PES GM 2016.

Regards,  
Juliana Nunes  
PhD Candidate  
Power and Energy Systems Research Division  
The University of Queensland  
Brisbane, Australia



# CQUniversity Brisbane Campus Student Branch



**DR. SANGEETHA KUTTY**  
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## **Committee:**

Chair: Colin Bertram  
Secretary: Parvinder Kaur  
Treasurer: Lucia Venturi

## **Introduction**

This is my first year as a student counsellor for our IEEE Student Branch CQUniversity Brisbane Campus which became operational in the second half of 2012. In this new role, I found that keeping the branch active was a challenging task as we have a low number of ICT students similar to the trend experienced in previous years. However, with the support of IEEE senior members, the branch was 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 2016**

In 2016, the student branch organised one technical event and two professional activities as detailed below. As a first event for the year, we had the IEEE student branch promotion at Brisbane campus on Monday March 21 with pizza lunch. We had Mike Robinson, senior member of IEEE, joining us at the promotion. Our speaker Mike Robinson, ex-treasurer, ex-webmaster and a senior member of IEEE talked about the benefits of IEEE membership and IEEE online services, including vTools, and the IEEE Job Site. We had 10 students registering on that day.

The technical event was a seminar on “Responsive Web Design” conducted on 20 April 2016 held at CQUniversity Brisbane Campus, 160 Ann Street, Brisbane.

Mike Robinson from the IEEE Queensland Section

conducted a seminar on this topical subject, which was attended by 36 people. The seminar was co-sponsored by the Australian Computer Society’s Queensland Branch which saved on running costs as well as obtaining improved attendance promoting students from neighbouring universities in Brisbane to actively participate.

In addition to these two events, we are also arranging an ICT Careers Evening on 23 November at CQUniversity Brisbane Campus, 160 Ann Street, Brisbane. Michael Sallaway, a senior software engineer from Opendgear will share his experience with our audience. He has worked with embedded computing and networking since 2006, first at Snapgear/Secure Computing building UTM firewall appliances, Leica Geosystems for precision agricultural GPS solutions, and now at Opendgear, building console servers and remote access gateways.

## **Social Activities**

To promote networking amongst the participants we designed the presentations in such a way that they could interact with other participants, past students who are working in the industry and with the presenter. Refreshments were provided during each event.

# Griffith University Gold Coast Student Report



**REZA AKBARZADEH**  
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## Committee:

Chair: Reza Akbarzadeh

Vice-chair: Gul ZK

Secretary: Josh Cataldi

Treasurer: Elise Jenkins

My second term of office as the chair of the Griffith University (Gold Coast) Student Branch is coming to an end. I established the IEEE Student Branch in September 2015. Since the foundation of the branch, I have organized a plethora of events encompassing both professional development and educational activities. The branch held six events throughout the year and all were well received and welcomed by students, academics, and industry members. 2016 has been a highly successful year in terms of the number of events and the attendees. This report provides a brief outline of the 2016 events.

The **Meet and Greet Promotional Activity** was held on 14 March 2016. The presenter of this event was Dr. Andrew Seagar. Dr. Seagar is the current head of Electrical and Electronic Engineering at Griffith University and is a senior IEEE member with over 30 years of experience. Dr. Seagar shared his experiences and the advantages of joining IEEE.

This event attracted over 40 attendees, most of which were undergraduate students, keen to explore what IEEE can offer to their professional careers. The purpose of this event was to expand the IEEE community within Griffith University by recruiting new members; this was highly successful. The branch also used this opportunity to present to the attendees, the annual plan for the 2016 academic year.

**Seminar on “Adventures in the Communications Industry”** was held on Thursday 17 March 2016. We were fortunate to welcome the University of Tasmania’s Professor JC Olivier. Prof. JC Olivier is one of the co-

inventors and a strong contributor towards the widely used 2.5G and 3G wireless standards. JC continued to contribute towards the emerging 4G standard, until 2003.

During this seminar, Prof. Olivier shared information about his career journey and spoke about current opportunities in the telecommunications industry. He also fielded questions from a number of students. The students and academics in attendance found the seminar particularly insightful and were inspired by JC’s accomplishments.

The **“Know Your Industry” Networking Event** was the highlight event of 2016. It is well known that in recent years the collaboration between industry and universities has slowly declined. This event was hosted on 5 April 2016, in a bid to help bridge this gap. The event was attended by over 30 students from the Electrical, Electronic, Biomedical and Mechatronic cohorts, Griffith academics and a number of industry representatives. Feedback from the event was very encouraging with many students enjoying the different perspectives the presenters had to offer.

This event had four presenters which include Dr. Daniel Eghbal (Energex), Anthony Aucone (Ledtek Global), Peter Bull (Noja Power) and Jonathan Shepherd (Queensland Academy of Sport).

The **Seminar on “Electro-Optic Systems Engineering”** was held on 3 May 2016. The presenter of this event was Mic Walsh who is the Chief Engineer of Laserdyne Technologies. With over 20 years

experience with electronics engineering design, Mic is an expert in all things analogue and digital electronics.

During this time Mic spoke about the systems engineering approach as well as PCB design from an industry perspective. The students in attendance found the seminar particularly insightful and were inspired by Mics technical skill, knowledge, and accomplishments.

Semester 1 concluded with a seminar on “Advance Power Electronic Applications”. The event was held on 2 June 2016 and was addressed by Presenter: Associate Professor Olivier Trescases of the University of Toronto. He is the co-inventor for six patents and has published over 65 papers in IEEE conferences and journals.

The aim of this event was to explore design, control, computation and integration of nonlinear, time-varying energy-processing electronic systems with fast dynamics. This event attracted almost 20 students, academics, and industry members. The attendees found this talk incredibly informative.

To further spark student’s interest in the area of power engineering, the branch organised a **site visit to the Gold Coast University Hospital Substation** with Energex on 8 September 2016. Third-year students studying ‘Power Transmission and Distribution’ benefitted greatly as Energex technicians Matt

and Tony spent time giving a tour of the plant and explaining the transmission process, control systems and maintenance involved.

Due to a high number of requests, a seminar was held on “**Industry Project From a Student’s Perspective**” on 21 September 2016. I presented the event on completing my industry project and thesis at Energex, a vital part of my final year.

The objective of this event was to demonstrate that the key to successful employment in the industry is proactive networking and to provide helpful advice for completing an industry project. During this event, attendees reported that they gained a valuable insight regarding what they can expect from the experience and how best to prepare for the transition from academia to industry.

To finish off a fantastic year, the upcoming office holders of 2017 were also elected. Dr. Stephen So (senior lecturer at Griffith University) will be the branch councillor. Furthermore, the forthcoming chair of 2017 is Ben John, an undergraduate student at Griffith University. I wish the very best for the upcoming executive team.

Contact us on [Facebook](#) or Email at ([gugcieee@gmail.com](mailto:gugcieee@gmail.com)) or visit our [website](#).

# Griffith University Nathan Student Report



**MOJTABA MOGHIMI**

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## Committee:

Chair: Mojtaba Moghimi

Vice-chair: Nazanin Nadian

Secretary: Arslan Akram Nizami

Treasurer: Domagoj Leskarac

Griffith University IEEE Student Branch Nathan Campus started its activities with a new committee in February 2016. Our main purpose is to provide the opportunity for students to get familiar with different activities and various sections of IEEE. In order to achieve this goal, we held two events in the first semester of 2016, a student recruiting event in conjunction with an Electric Bike presentation and an Advanced Power Electronics seminar later in the semester. We continued our activities in second semester of 2016 with a tour to UQ solar farm and an event about Smart Buildings presenting the Sir Samuel Griffith Centre (N78) located at Griffith University. We ended our activities in 2016 with a strong presence at Australasian Universities Power and Energy Conference (AUPEC2016) and are looking forward to further improving the student branch in 2017.

## Electric Bike Presentation and Recruiting Event: April 2016

Our first event as Griffith University IEEE Student Branch Nathan was a presentation on the advancements in Electric Bicycles. Our guest speaker for the evening was Nick Willis, from Electric Bikes Brisbane. Students and IEEE members had the opportunity to not only learn about motor, power electronic and battery designs, but how they are utilised and implemented as well. Nick brought some of the top models in electric bikes to the presentation and provided the opportunity to test and ride the bikes. The event was held on the 19 April 2016 from 4:30pm to 5:30pm at Griffith University - Nathan campus. The seminar was followed

by a BBQ for IEEE members.

We achieved a total number of 35 attendees with members of the public, new and existing IEEE members. Eleven new IEEE student sign ups was the considerable outcome of the recruitment event as well as the discussions on Electric Bikes.

## Advanced Power Electronics for renewable Energy Applications: June 2016

The second event of Griffith University IEEE Student Branch Nathan was a seminar presented by Associate Professor Olivier Trescases from the University of Toronto. Professor Trescases discussed five recent research projects of his power electronics group:

- 1) Ultracapacitor/Battery Hybrid Energy Storage System with Real-Time Power-Mix Control Validated Experimentally in a Custom Electric Vehicle.
- 2) A Dual-Mode Driver IC with Monolithic Negative Gate Voltage Capability and Digital Current-Mode Controller for GaN Power Devices.
- 3) A Cell-Level Differential Power Processing IC for Concentrating-PV Systems.
- 4) Lightweight Silicon Carbide Power Converter for an Electric Aircraft.
- 5) Burst-Mode Resonant LLC Resonant Converter for an LED Luminaire with Integrated Visible Light Communication for Smart Buildings.

Professor Olivier Trescases presented these advancements in research with an overview and in-depth discussion with the 21 attendees of mostly IEEE members on the day. He conducts research on

advanced power electronics for automotive, industrial, aerospace and renewable energy applications. He is the Vice Chair of IEEE Toronto Section with over 5000 members and has served on the technical committee of various IEEE conferences. Since 2015 he is an Associate Editor of the IEEE Transactions on Power Electronics.

The event was held on 9 June at Griffith University Nathan Campus and a pizza lunch was provided for IEEE members after the seminar.

### **UQ Solar Farm Field Trip: September 2016**

Griffith University Nathan IEEE Student Branch continued its activities in the second semester of 2016 with a tour to UQ Solar Farm in collaboration with Griffith School of Engineering. The 3.275 megawatt Gatton Solar Research Facility (GSRF) comprises more than 37,000 thin-film photovoltaic panels, mounted on the campus's 10ha former airstrip. The GSRF contains a 3.275 MW CdTe array, bespoke Central Supervisory System, Data Hub, Research Building and Battery Storage Research Station. The installation provides about 40 percent of the Gatton Campus electricity requirements, and during peak production exports into the local Lockyer Valley 11 kV network.

A total of 56 students attended the tour. The visit to the solar farm was on 15 September from 9am to 12pm. The tour started with a presentation of the facility by one of the managers at the solar farm. Then, students had the chance to go to the solar farm and see how different types of solar arrays work in a real environment. Dr. Kaparaju and Dr. Stegen explained the differences between fixed mount systems, single axis and dual axis trackers to students.

### **Smart Buildings: The Path Towards Future Cities: September 2016**

Smart buildings are necessary for creating cities of the future. Such buildings are completely carbon and energy neutral and form self-sufficient nodes on distribution networks. Griffith University's Sir Samuel Griffith Centre forms the basis of smart buildings, with a large incorporated solar array

powering the facility alongside Lithium and Hydrogen-Metal Hydride batteries serving as the primary energy storage systems alongside energy management systems for power distribution and control. The Sir Samuel Griffith Centre has been awarded a 6-star green rating by the Green Building Council of Australia.

Griffith University Nathan IEEE Student Branch asked Professor Evan Gray and Dr. Alison Rice to present the Sir Samuel Griffith Centre. Professor Gray presented technical aspects of Sir Samuel Griffith Centre and Dr. Rice explained more general aspects of the smart building. The event was held on the 16 September 2016 from 5pm to 6pm at Griffith University Nathan Campus. The seminar was followed by a building tour and catering.

Thirty-three guests from industry, members of the public, university staff and IEEE student members attended the meeting.

### **Australasian Universities Power and Energy Conference (AUPEC2016): September 2016**

Solar and wind-powered generation are rapidly increasing in Australasia. Battery storage and electric vehicles are also emerging. The main theme of the conference was increasing renewable generation and battery storage in power systems. New techniques to model and mitigate the impacts of the game-changing technologies on the operation of the power system were a key focus of this conference. The conference was held from 25 to 28 September at University of Queensland.

Griffith University Nathan IEEE Student Branch had a strong presence with a high number of papers presented at the conference (4th rank in number of accepted papers) with members of the student branch receiving prizes at the conference. Besides the technical achievements at the conference, we initiated collaborations with QUT and UQ student branches for future events and cooperation.

In order to get information about our future events and activities, you can contact us through Email at ([IEEEENathan@griffith.edu.au](mailto:IEEEENathan@griffith.edu.au)) or via our [Facebook](#) page.

# Power and Energy University of Queensland Student Branch



**HANXIAO ZHANG**  
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**Committee:** Chair: Hanxiao Zhang (B. Eng at University of Queensland)  
Vice Chair: Lakshitha Naranpanawe (PhD Eng at University of Queensland)  
Secretary: Xinren Marcus Jiang (M. Eng at University of Queensland)  
Counsellor: Rahul Sharma

The major events in 2016 are as follows:

***March 21 - Developing Data Mining and Visualization Techniques for the integrated analysis of complex, spatially located Data Sets for Both Exploration and Mining Purposes***

Speakers: Stephen Fraser, Andrew Olsson (CSIRO)  
This technical talk was organized by IEEE Power and Energy Society UQ Chapter for all the students of the School of Engineering Architecture and Information Technology.

***March 24 - Information Session (in collaboration with IEEE UQ Student Branch)***

Prof. Tapan Saha and Dr Rahul Sharma gave presentations about the benefits of joining IEEE to continuing students with pizza for new and existing members.

Approximately 100 attendees.

***July 27 Membership Promotion Program***

IEEE PES UQ chapter organized this event in association with UQ Market Day to promote IEEE and IEEE PES.

***October 16 - Boost Your Employability with Better Communication Skills***

Speaker: Catherine Moore (Communication Specialist and an English Language Consultant from ETS Global)  
IEEE Power and Energy Society UQ Chapter organized this talk for all the students of the School of Engineering Architecture and Information Technology to help them improve their communication skills.

# Queensland University of Technology Student Branch



**NIMA KHOSHSIRAT**  
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## **Committee:**

Chair: Nima Khoshsirat

Vice-chair: Afsaneh Narimani

Secretary: Venkata Satyavani Varanasi

Treasurer: Aaron Liu

## **Introduction**

New committee was elected through an election on 11 July 2016 and officially started their activities on 15 July 2016. The main mission of the elected committee is to bring more value for IEEE student members at QUT by organizing local and regional events. Accordingly, throughout the last four months from the beginning of new committee's activities, five events have been organized. Below are the events details:

### **1. QUT Open Day (31 July 2016):**

IEEE QUT student branch committee members actively participated in QUT Open Day to promote and introduce IEEE activities, missions and visions to potential future students. IEEE membership benefits and values were described in detail for students who were interested in IEEE as a great professional network.

### **2. Technical Talk on Potentials of Solar Energy in Australia (19 August 2016)**

The potentials of solar energy in Australia were discussed in this technical meeting. Professor John Bell, head of the School of Chemistry, Physics and Mechanical Engineering gave a talk on solar energy potentials, challenges and prospects in Australia. Then Mr Cameron Tuesley, founder of Team Arrow solar car (which successfully finished the world solar challenge competition) shared their interesting story of success

with us.

### **3. IEEE Day Event (11 October 2016)**

This meeting with QUT IEEE student members was planned to celebrate 2016 IEEE DAY. There was also a talk by Dr Mark Broadmeadow, QUT IEEE Student Branch Councilor. As a young academic and professional, Dr Broadmeadow discussed his career path, research, activities in industry and horizons in students and young researcher's future. Then Nima, chair of QUT student branch, introduced lesser-known IEEE membership values to our student members and non-member students to encourage them to take out IEEE membership. He also encouraged student members to get involved in branch activities in an interactive discussion session.

### **4. Career Development for Engineering in Medicine/Biology (11 November 2016)**

An this event, the speakers shared their experiences in Biomedical Engineering with the audience. The career journeys included a R&D perspective and a post-doc journey from student to research scientist in Health Engineering.

The following speakers presented:

Dr. Mohan Karunanithi (QLD IEEE EMBC Society Chair), Mr. Vidur Lal, (Senior Project Manager, Philips Health care), Dr. Shaun Gregory (Technical Director,

ICET Lab, University of Queensland and The Prince Charles Hospital), Ms Laurie Mackenzie (CSIRO HR Officer), Dr. Ying Xia (CSIRO).

**5. Developing Scientific Survival Skills (24 November 2016)**

Professor Federico Rosei (director of INRS-EMC University of Quebec) presented his lecture on job

markets for graduates in science and engineering, publishing quality paper, presenting our work to our peers, and fundamental laws of 'scientific survival'.



# University of Queensland Student Branch



**RAHUL SHARMA**  
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## **Committee:**

Chair: Jeremy Taylor

Vice-chair: Michael Broe

Secretary: Elizabeth Deeb

Counsellor: Rahul Sharma

The major events in 2016 are as follows:

### *February 23 - Faculty of EAIT Orientation*

Michael and Jeremy ran a stall during orientation week providing information about IEEE to commencing students and distributing promotional giveaways. Approximately 1000 attendees.

### *March 24 - Information Session*

Prof. Tapan Saha and Dr Rahul Sharma gave presentations about the benefits of joining IEEE to continuing students with pizza for new and existing members. Approximately 100 attendees.

### *October 5 - Academic Poster Design Workshop*

Jeremy ran a workshop on academic poster design for final year students preparing for thesis presentations and PHD students preparing for conferences. Over 50 attendees.

Throughout the year the student branch also promoted the events held on campus by other IEEE societies to the wider student body who do not regularly check vTools.

Further details with more detailed descriptions can be found on the [Facebook page](#).

## 2016 Queensland Section Office Holders

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