



INSTITUTE OF
ELECTRICAL AND
ELECTRONICS ENGINEERS

QUEENSLAND SECTION

ABN 67 431 648 974

ANNUAL GENERAL MEETING REPORT FOR 2019

PRESENTED AT
BRISBANE EXHIBITION AND
CONVENTION CENTRE

ON
6 DECEMBER 2019

ieee-qld.org

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2019 AGM Report Contents:

Section Chair's Report.....	4
Section Vice Chair's Report.....	5
Treasurer's Report.....	6
Secretary's Report.....	11
Awards and Recognition Report	13
Membership Development Report	16
Professional Activities Report	18
Aerospace and Electronic Systems Society.....	20
Blockchain & Internet of Things Joint Group.....	21
Control Systems/Robotics and Automation Societies	23
Microwave Theory & Techniques/Antennas & Propagation Societies	25
Mu Kappa Society	27
Power Electronics/Industrial Electronics/Industry Applications Societies	30
Power and Energy & Dielectric and Electrical Insulation Societies.....	32
Power & Energy Society (PES) Conference Travel Prize 1.....	36
Power & Energy Society (PES) Conference Travel Prize 2.....	37
Power & Energy Society (PES) Conference Travel Prize 3.....	39
Women in Engineering	41
QUT Student Report.....	43
UQ Student Report.....	44
UQ PES Student Branch	46

Section Chair's Report



Nilesh Modi

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It was a pleasure volunteer as a section chair for the first time. This report highlights the key contribution of the volunteers who worked tirelessly throughout the year to provide value to the IEEE member and society. The following highlights key activities of the section.

- The section organized 70+ activities which included technical seminars, professional activities, workshops and seminars.
- Earlier this year, we had interest from a few IEEE members to establish 'Blockchain and Internet of Things' special interest group. The section has now established a new special interest group on Blockchain and Internet of Things. Further detail about the activities of this group is provided later in the AGM report.
- Throughout the year, the section applied for various funding and grants available from Region 10 and I am happy to advise that Blockchain/IoT and Professional Activities received funding from Region 10 for organizing activities.
- This year the section celebrated IEEE Day. The IEEE Day is celebrating the first time in history when engineers worldwide and IEEE members gathered to share their technical ideas in 1884. One of the IEEE Day's objectives is to show the ways thousands of IEEE members in local communities connect to collaborate on ideas that leverage technology for a

better tomorrow. We celebrate IEEE members! The section celebrated IEEE day on 1 October 2019 by organizing a BBQ for IEEE members. The section ran a membership drive during this celebration

- The section initiated three more awards to recognize outstanding contributions from the IEEE members. They are 'outstanding women in engineering award', 'outstanding young professional award' and 'outstanding student volunteer award'. The results of this award will be announced during Awards Dinner.
- You may have noticed an increase in our social media presence. We have started to engage the broader community though LinkedIn, Facebook and Twitter. I encourage you to connect with us through these social media avenues.

The section committee has 60+ positions. All positions will automatically become vacant on 31 December every year. The results of the election for 2020 positions will be announced during the Annual General Meeting.

As we wrap another exciting year, I would like to thank all the volunteers, including those who participated in the events, for their contribution to the section activities. It was a pleasure to work with energetic team members of the section. I wish everyone all the very best for the festive season.

Section Vice Chair's Report



Alexandra Posoldova
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This year was the first year I served in the Vice Chair role. I have been with IEEE Queensland for 5 years and I must admit this was a quite turbulent year for the section. While some chapters and groups did very well and organized a number of successful events, others were inactive, and we struggled to find committed volunteers.

At the beginning of the year, I wanted to focus on our membership base and discover what our members value the most and how can we provide them with more of that. With the differences in volunteer's commitment, my focus changed during the year and I started to turn my attention on understanding the benefits for section volunteers to ensure consistent performance across chapters and handover of volunteering duties from one year to another. My belief is that, if the section has committed volunteers who are passionate about the technology, they will provide value for section members. While this is an ongoing initiative, the first step was to list volunteer benefits and changing the call for nominations to be more appealing. Current chapter chairs were

kindly asked to find their successor if they choose not to continue in their role ensuring that the chapter will remain to be active in the upcoming year. This was achieved with the help of our webmaster who updated our page with the latest information and the secretary who increased our section's presence on social media.

Early this year, I had the opportunity to travel to the R10 annual meeting held in Melbourne, Australia. It was great to connect with experienced members from R10 and gain an understanding of future directions of IEEE on the global level.

Mid-year, a new interest group was founded targeting emerging technologies called Blockchain & IoT group. This interest group won funding and organised two successful events. We hope to see this group grow in upcoming years filling the gap between existing well-known engineering areas and cutting-edge technologies.

I look forward to the upcoming years and wish the section all the best.

Treasurer's Report



Vaughan Clarkson
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Summary

The net worth of Qld Section rose markedly over the 12-month period reported here, that being from 1 November, 2018, to 31 October, 2019. It increased from \$97,824.84 to \$131,314.44, representing 34% annual growth.

This extraordinary strengthening of our financial position is chiefly attributable to two factors, about equal in magnitude. First, two conferences held in 2018, which the section had underwritten, returned sizeable surpluses. Second, significant liabilities, which headquarters had imposed on the section in instalments between 2012 and 2016 to shore up its central reserve, were forgiven.

This improvement comes despite the section taking steps to ramp up its activity. Compared to the same period last year, spending increased by 70%. Spending increased in nearly all areas.

The process, which began last year, to transition our banking from Bank Australia to ANZ, was completed this year. The "Everyday Access" account at Bank Australia was closed and the balance transferred to a cheque account at ANZ. Likewise, as each of three term deposits matured at Bank Australia, the proceeds were transferred to ANZ, where three new term deposits were established.

Income

Rebates from IEEE increased slightly from the equivalent period last year, rising by a little over 7%. This is roughly

commensurate with the increase in Qld IEEE membership, which rose from 1147 to 1218, or just over 6%, between the two rebate census dates.

In terms of income directly attributable to headquarters, the extraordinary income this year is the forgiving of liabilities that had accrued between 2012 and 2016 to support IEEE's central reserve. This is a significant sum, at \$19,134.76, and its existence was only discovered in the course of preparing this report.

The other extraordinary income relates to the surpluses distributed to the section from two successful conferences run in 2018. These were the 2018 International Conference on Radar and the Women in Engineering (WIE) International Leadership Symposium (ILS). Both were held at the Brisbane Convention & Exhibition Centre (BCEC). These returned surpluses of \$19,892.08 to the section. See the reports on these conferences at the 2018 AGM.

For the second year in a row, the AGM & dinner in 2018 was held at BCEC too (and will be held there again this year). Ticket sales dipped to \$2,588.42 from \$3,950.00 the year before, reflecting lower attendance, but also due to fees charged by Eventbrite, whom the Section engaged for the first time in order to facilitate credit-card payment.

GST credits were substantially higher, at \$3,037.40, than for the previous year, when it was just \$74.55. Of this, \$2,000.00 is attributable to return of seed funding for the Radar '18 and WIE ILS conferences to the

IEEE SA and NSW Sections, respectively, which conversely had decreased the GST credit reported in the previous period.

The interest received, at \$1,926.40, is little changed from last year, when it was \$1,968.11. The credit this year derives largely from the maturation of the three-year term deposit at Bank Australia. Income from interest can be expected to be markedly lower next year, taking account of the current very-low-interest-rate environment.

Expenses

Given the windfall from conference surpluses, there was a conscious effort to try to increase expenditure over the past year for the benefit of Queensland-based members. Spending on chapter, affinity group, honour society and student branch activities increased to \$11,104.64. Spending was dominated by an \$8,000 outlay in PES chapter travel grants, awarded on merit to allow five postgraduate students to attend overseas technical conferences (two rounds of grant expenditure fell within a single reporting period).

The gross expenditure on the 2018 AGM & dinner came to \$8,569.49, combining amounts from this reporting period and the previous one (since expenditure straddles the boundary). This compares with \$7,639.00 in 2017. As foreshadowed in last year's report, the increase is largely due to the decision to engage a professional speaker, flown up from Melbourne. For the 2019 AGM & dinner, expenditure is expected to be roughly on par with 2018. Higher ticket sales have

meant that a larger space has had to be hired, which would tend to increase the cost, but that is offset against collocating with the Conferences 101 event, to be held earlier in the day, and with which expenses are shared.

Travel costs are more than double this year compared with last year. This is largely attributable to the decision to send a larger-than-normal contingent to attend the IEEE Region 10 meet in February which, this year, was held in Australia (Melbourne) for the first time in more than a decade. Although travel spending has doubled from last year, it is less than half the spending of the year before that, when the section supported a large contingent to attend the first Sections Congress ever held in Australia.

Two new initiatives were trialled this year. First, the section decided to make a significant outlay, totalling \$1,636.23, to recognise and celebrate IEEE Day. Please see the descriptions of those activities elsewhere in this AGM report. Second, as alluded to above, an event collocated with (and running just before) the 2019 AGM & dinner, called "Conferences 101", is being trialled. This event aims to educate IEEE members about what's involved in running a conference as a volunteer and what resources are available locally and within IEEE to provide support. Conferences 101 shares costs with the AGM & dinner. At the time of writing, costs are still being accumulated, amounting so far to \$1,150.00, with no income from ticket sales yet having been transferred to the section's bank account.

2019 Financial Report

Period: 1st November, 2018–31st October, 2019

Treasurer: Vaughan Clarkson

<u>Income</u>		<u>Expenses</u>	
IEEE member rebates	\$ 11,480.64	Account-keeping fees	\$ 45.00
IEEE other section rebates	\$ 3,401.33	Australia Council levy	\$ -
IEEE student branch rebates		Professional activities	\$ 68.00
GUGC	\$ 173.89	2018 AGM & dinner	\$ 5,009.49
QUT	\$ 621.28	2019 AGM & dinner	\$ 3,300.00
UQ	\$ 604.47	Awards & recognition	\$ 100.00
IEEE other chapter rebates		Student thesis prizes	\$ 1,500.00
AES	\$ 267.89	Travel	\$ 5,532.53
PES/DEIS	\$ 855.28	Section meeting catering	\$ 405.64
IEEE liabilities forgiven	\$ 19,134.76	Student/HKN membership subsidies	\$ 100.00
		EA/IET/IEEE Fraternity Dinner support	\$ 350.00
		EA Edison Street Tubes event	\$ 192.71
Radar '18	\$ 7,748.80	2019 IEEE Day events	\$ 1,636.23
WIE ILS Brisbane '18	\$ 12,143.28	Conferences 101 event	\$ 1,150.00
2018 AGM & dinner	\$ 2,588.42	Student Branches	
GST credit	\$ 3,037.40	QUT	\$ 181.81
Interest received	\$ 1,926.40	UQ	\$ 281.76
		Chapters, Affinity Groups & Honour Societies	
		AES	\$ 919.73
		EMBS	\$ 98.00
		HKN	\$ 165.49
		MTT/AP	\$ 784.55
		PELS/IES/IAS	\$ 558.35
		PES/DEIS	\$ 8,041.00
		WIE	\$ 73.95
Total income	\$ 63,983.84	Total expenses	\$ 30,494.24
<u>Assets</u>		<u>Liabilities</u>	
ANZ Brookside 014203		Reserve Allocation Payable	
Cheque Account	\$ 56,314.44	1/8/12	\$ 5,779.87
469430083		1/7/13	\$ 5,303.01
Business Notice Term	\$ 25,000.00	1/8/14	\$ 591.22
Dep (1yr) 911003659		1/7/15	\$ 5,608.87
Business Notice Term	\$ 25,000.00	1/7/16	\$ 1,851.79
Dep (2yr) 911003931		24/6/19	\$ (19,134.76)
Business Notice Term	\$ 25,000.00		
Dep (3yr) 914758977			
Total assets	\$131,314.44	Total liabilities	\$ -
Net worth	\$131,314.44		



**IEEE MEMBER AND GEOGRAPHIC ACTIVITIES DEPARTMENT
STATEMENT OF REBATE
2019**

R00553 Queensland Section

24 Apr 2019

SECTION ALLOWANCE:		\$2,000.00
Member Breakdown:		
Member	798 @ 3.00 ea.	\$2,394.00
Graduate Student Member	129 @ 3.00 ea.	\$387.00
Student Member	94 @ 3.00 ea.	\$282.00
Associate Member	22 @ 3.00 ea.	\$66.00
Affiliate	21 @ 1.50 ea.	\$31.50
Senior Member	151 @ 4.00 ea.	\$604.00
Fellow	3 @ 4.00 ea.	\$12.00
Total Member Rebate:		\$3,776.50
Subsections <i>(For eligible, qualified Subsections):</i>		\$0.00
Chapters <i>(w/Acceptable # of Events, 2@\$200.00 ea.):</i>		\$400.00
Joint Chapters <i>(w/Acceptable # of Events, 5@\$200.00 ea.):</i>		\$1,000.00
Affinity Groups <i>(w/Acceptable # of Events, 2@\$200.00 ea.):</i>		\$400.00
Subtotal 2019 Rebate		\$7,576.50
Met deadline = 10% Bonus		\$757.65
- Less Deductions		\$266.27
Total 2019 Rebate:		\$8,067.88
Activity Bonus <i>(if requirements are met):</i>		
Section Bonus:	\$0.00	
Subsection(s) Bonus:	\$0.00	
Chapter(s) Bonus:	\$0.00	
Joint Chapter(s) Bonus <i>(2@\$75.00 ea.):</i>	\$150.00	
Affinity Group(s) Bonus:	\$0.00	
Net 2019 Rebate:		\$8,217.88



**IEEE MEMBER AND GEOGRAPHIC ACTIVITIES DEPARTMENT
UNIT BREAKDOWN
2019**

R00553 Queensland Section

24 Apr 2019

CHAPTERS

Organizational Unit	Mem	T	NT	P	A	Total	Base Amount	Timeliness Bonus	Activity Bonus	Total
CH10097 Queensland Section Chapter, C16		0	2	0	0	2	\$0.00	\$0.00	\$0.00	\$0.00
CH10325 Queensland Section Chapter, CIS11		2	0	0	0	2	\$200.00	\$20.00	\$0.00	\$220.00
CH10448 Queensland Section Chapter, AES10		4	0	0	0	4	\$200.00	\$20.00	\$0.00	\$220.00
CH10451 Queensland Section Chapter, EMB18		1	0	0	0	1	\$0.00	\$0.00	\$0.00	\$0.00

JOINT CHAPTERS

Organizational Unit	Mem	T	NT	P	A	Total	Base Amount	Timeliness Bonus	Activity Bonus	Total
CH10096 Queensland Section Chapter, PE31/DEI32		7	0	1	0	8	\$200.00	\$20.00	\$75.00	\$295.00
CH10153 Queensland Section Jt Chapter, SP01/COM19		12	0	0	0	12	\$200.00	\$20.00	\$75.00	\$295.00
CH10240 Queensland Section Jt. Chapter, CS23/RA24		2	0	0	0	2	\$200.00	\$20.00	\$0.00	\$220.00
CH10281 Queensland Section Jt. Chapter, AP03/MTT17		4	0	6	0	10	\$200.00	\$20.00	\$0.00	\$220.00
CH10810 Queensland Section Jt. Chapter, PEL35/IE13/IA34		3	0	0	0	3	\$200.00	\$20.00	\$0.00	\$220.00

AFFINITY GROUPS

Organizational Unit	Mem	T	NT	P	A	Total	Base Amount	Timeliness Bonus	Activity Bonus	Total
GD00553 Queensland Section Affinity Group, YP		0	0	2	0	2	\$200.00	\$20.00	\$0.00	\$220.00
WE00553 Queensland Section Affinity Group, WIE		0	1	1	0	2	\$200.00	\$20.00	\$0.00	\$220.00

Secretary's Report



Jenniffer Zapata Giraldo
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2019 marks my first time as secretary of the Queensland Section. It has been an incredible year and I have enjoyed thoroughly this position. I would like to thank all of you for trusting me.

This was a smooth year in terms of quality of the meetings. All of them were held at the Advanced Engineering Building #49, Room 49-601 with excellent audio and space. I assisted in the production of minutes and notice of meetings as well as preparing Region 10 reports. All of them were submitted accordingly to the guidelines and in the time frame.

This year marks the first time the Queensland Section celebrated IEEE day. We did it with an Aussie-style barbeque and followed with a membership drive activity. This year's theme was: "I am an IEEE member, what is your superpower", which showed how important it is to us to volunteer. I would like to encourage all Queensland members to keep participating in these events.



I also served as the community manager coordinator this year, a position that was

needed. Different social media channels were created and throughout the year I tried to post as many IEEE events as possible. I would like to encourage all executive members to send me information and pictures for publication so we can increase our social media presence. Remember to follow us on Facebook, Twitter and LinkedIn.

I would like to thank all the committee members that sent me their reports and especially to Nilesh Modi, Alexandra Posoldova and Vaughan Clarkson for reviewing my minutes before I distributed the minutes to committee members.

The average attendance for the executive committee was 33%. Let us try and improve this number for next year.

Happy Christmas and Happy New Year



Awards and Recognition Report



Amin Mokari

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This year the Awards and Recognition committee has retained the award structure used in previous years. The awards process is also the same as 2018, which commenced 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.

This year the IEEE Queensland section initiates new awards to recognize the contribution from section members as follows:

1. IEEE QLD Outstanding Young Professional
2. IEEE QLD Outstanding Women in Engineering
3. IEEE QLD Outstanding Student Volunteer

The QLD section committee formed a committee of at least three members to server on the judging panel after receiving nominations from the committee members.

Recognition of Service Awards

A total of four Recognition of Service awards were presented by the IEEE Queensland Section in 2019.

Recipient	Role
Marie-Luise Wille	Women in Engineering Chapter Chair
Daniel Eghbal	Committee Chair
Alexandra Posoldova	Committee Secretary

Vaughan Clarkson	Committee Treasurer
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Outstanding Contribution Awards

Four Outstanding Contribution awards were awarded by the IEEE Queensland Section in 2019.

Recipient	Role
Marie-Luise Wille	Women in Engineering Chapter Chair
Daniel Eghbal	Committee Chair
Alexandra Posoldova	Committee Secretary
Vaughan Clarkson	Committee Treasurer

Volunteer of the Year Award

A vote was taken by members of the IEEE Queensland Section committee and Marie-Luise Wille was elected Volunteer of the Year for 2018.

Outstanding Young Professional Award

A Young Professional is defined by the IEEE as someone who has graduated from their first professional degree within the past 15 years. The winner is Alexandra Posoldova as she has been volunteering with the section in different capacities (YP/WIE and recently Section VC).

Outstanding Women in Engineering Award

The Women in Engineering award is open to WIE affinity group members and members that have contributed to advancing the WIE professional environment at large. This award is not gender specific. The winner is Marie-Luise Wille for her outstanding leadership in WIE and successful delivery of International leadership summit.

Outstanding Student Volunteer Award

A student is identified as a member with an IEEE student or graduate student membership. The winner is Ebby Thomas as he has been with section for few years in his capacity as UQ PES chapter representative, UQ student branch and IEEE HKN representative.

Undergraduate Student Thesis Awards

A vote was taken by the judging panels of three members of the IEEE Queensland Section committee and the outcome is as below:

- 1) IEEE Student Prize for the best final year thesis in all fields of Electrical Engineering and Information Technology: Stephani Scott (Development of a Real Time Thermal Ratings System for High Voltage Transmission Lines)
- 2) IEEE Student Prize for the best final year thesis in Power Engineering: Anthony Love (Transforming Energy Big Data into Smart Data)
- 3) IEEE Queensland Section's Signal and Image Processing: Nikaela Podolsky (Classification of Steering Wheel Contacts from ECG Signals)

PES Travel Prize Awards

IEEE Queensland Section PES/DEIS chapter has been supporting outstanding PES student members from Queensland universities to attend the IEEE PES General Meeting to present their papers/posters in the USA. The PES Travel Prize (\$1,333 each) was awarded to three recipients in 2019:

- 1) Mohammad Imran Azim, Paper titled: "Feasibility Study of Financial P2P Energy Trading in a Grid-Tied Power Network" from The University of Queensland.
- 2) Sameera Samarasinghe, Paper titled: "A Study on On-load Tap Changer Selector Switch Failure Mechanism Caused by Silver Sulphide Corrosion using Finite Element Modelling" from The University of Queensland.

- 3) Muhammad A. Ansari, Paper titled: "Performance Evaluation of Fibre Optic Sensors to Measure Moisture in Transformer Insulation" from The University of Queensland.

PES Outstanding Engineer Award

This annual award recognises outstanding technical, professional, and society contribution on behalf of the power and energy profession. The winner is Mr. Keith J. Callaghan for dedicated service to the power industry in the area of transmission lines and substations in 2018.

PES Outstanding Volunteer Award

IEEE PES-DEIS joint Chapter of Queensland has selected Mr. David Batterham for 2018 Certificate of Appreciation 'for dedicated service to IEEE PES-DEIS Queensland joint Chapter'.

Membership Development Report



Sudarshan Dahal
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Membership Status

IEEE Queensland section has 1039 active members as of 15 November 2019. This number has declined from 1208 during the same period last year. The detailed breakdown of the membership categories

are shown in the following tables. Specifically, the section has seen significant decline in member grade and student grades despite the section's effort to follow up the members in arrears.

Queensland Section	IEEE Grades	Associate Member	23
		Fellow	3
		Graduate Student Member	114
		Life Member	30
		Life Senior	14
		Member	770
		Senior Member	136
		Student Member	98
		Other Grades	Affiliate
	SA Member	1	
	Total		1,208

IEEE QLD Section Membership Status in 2018

Queensland Section	IEEE Grades	Associate Member	11
		Fellow	4
		Graduate Student Member	94
		Life Member	32
		Life Senior	14
		Member	663
		Senior Member	143
		Student Member	64
		Other Grades	Affiliate
	SA Member	1	
	Total		1,039

IEEE QLD Section Membership Status in 2019

Membership Development Activities

IEEE Queensland Section organised various membership development

activities this year. Some of the events to highlight are below.

- 1) *Membership Development Activities – Universities*

Events were organised at various universities (Queensland University of Technology, Central Queensland University, Griffith University and The University of Queensland)

2) *Membership Development Activity – Industry*

This year planned industry event had to be cancelled due to unviability of the speaker at the last minute.

3) *Senior membership Drive*

The section invited applications from eligible members to apply for senior member. The applicants were assisted to find suitable referrers. About 7 members have been successful in elevating to senior member so far.

What Next

IEEE Queensland section has seen a decline in membership this year. Closer looks at the tables show that there has been sharp declines in member grade and student member grade. The Section should

prioritise the membership-focussed events in the coming years.

IEEE Queensland section has big potential to increase its membership base. One of the major areas that section can work on is to engage industry professionals in IEEE activities. So far, there has been comparatively limited interest and engagement from industry.

The Section should also work with local engineering bodies to promote its uniqueness and significance of becoming IEEE member among professional communities.

The Section should also organise motivational programs for existing members for member retention. Especially for student members who are aspiring for better careers, the section could bring various supportive programs to help them achieve their goals and keep them connected with IEEE.

Professional Activities Report



Waail Mahmud Lafta
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IEEE QLD had a very successful year in the field of professional activities. The section was part of the R10 Professional Activities Committee (PAC) program and organized the project titled (Continuous Professional Development Seminar Series) (CPD) to initiate a regular monthly event calendar for professional development for Queensland Section IEEE members. These seminars were funded by the R10 Professional Activities Committee (PAC).

These seminars were held at a different location to cater to the geographically spread members of the Queensland section. These seminars focused to enhance lifelong learning and employability of the members.

On 25 September 2019, the first IEEE QLD CPD seminar was held at the University of Queensland with the subject (The Future of Work: the evolution of the firm, new work arrangements and the future of the professions) by Dr Alan Burton-Jones. The speaker confirmed that the emergence of a globalised, knowledge and service-intensive economy, fuelled by advances in information systems and technologies is well attested to in the literature. Recent advances in robotics, AI, and related fields are predicted to accelerate these trends, creating new industries, new jobs, and increasing remuneration for the higher-skilled while destroying old industries and promising casualization or unemployment for the lower-skilled. Work previously conducted in the firm is being increasingly automated and externalised and new forms of organization emerging based on platform technologies.



Also, he said, in the medium term, the future of work appears uncertain even for the higher-skilled, as medical, legal, accounting, and other 'professional' knowledge starts to be supplied more efficiently using smart machines rather than smart people. This presentation examined the forces driving these trends, the challenges they pose for stakeholders and the need for closer integration of IT and HR management in organizations.



On 21 October 2019, the second IEEE QLD CPD held at the Advanced Engineering Building UQ with the subject (How to perform subjective risk assessment from multiple safety reports)

by Dr Guido Carim Junior from Griffith University. In this seminar, Dr Guido explained that since the number of reports is increasing every year, it has been challenging to cope with each one individually. Reports that bring similar events are brought together and coded using the same qualitative data analysis technique. The code searches for factors, hazards, consequences and barriers. Then, the risk is assessed based on quantitative numbers derived from this analysis.

The third IEEE QLD CPD held on 25 November 2019 at Griffith University with the subject (Informal Networking, Project-Team Assignment, and Inequalities – How individuals and organisations can Improve Engineer’s Attainment of Interesting, Challenging Work and Their Retention INFORMAL) by Dr Kim Ball, from the Department of Employment Relations and Human Resources, Griffith University and Consultant at Connecting for Career Success.

Dr Kim said that research shows a lack of interesting, challenging work is major reason engineers leave their organisation, and, for women, it is a major reason to leave the profession. She referred the (We know that: engineers learn and develop through their work and by cooperating with others; on-the-job learning contributes more to employees’ knowledge and development than formal training programs, and building networks is essential for engineers to develop technically and build a professional reputation. Also, little is known about what constitutes interesting, challenging work for engineers, how this work is assigned, and how engineers’ networking relationships are formed and contribute to their career development.

Aerospace and Electronic Systems Society



Jason Williams

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Committee:

Chair: Jason Williams
Vice Chair: Tristan Gunnarsson
Secretary: Hanxiao Zhang

The Queensland chapter of the Aerospace and Electronic Systems Society (AESS) held two technical events in 2019. The first was a half-day tutorial by Dr David Crouse from the US Naval Research Laboratory, on Friday 21 June at QUT Gardens Point. Dr Crouse's tutorial covered topics from Bayesian estimation and filtering to data association and track management. The tutorial was run in collaboration with the South Australia chapter, which held a two-day short course covering similar topics in more detail.

The second event was a seminar by our own Adj Prof Vaughan Clarkson on New Frontiers in Radar, held on Thursday 14 November. Prof Clarkson briefly touched

on the history of radar, surveyed some of the success stories of radar here in Queensland, and outlined his recent work in related areas of tracking and radar sensor management. The event was held at Charles Sturt University Study Centre Brisbane and provided an opportunity for networking between both CSU and QUT students, and industry members including those from the nearby Boeing office.

Finally, AESS members also benefited from the generous invitations to events from closely related societies, specifically Signal Processing/Communications, and Microwave Theory and Techniques/Antennas and Propagation.



Blockchain & Internet of Things Joint Group



Alexandra Posoldova
A.posoldova@gmail.com

Committee:

Chair: Alexandra Posoldova
Vice Chair: Matthew Hutchins

Blockchain and IoT interest group was founded by myself and Matthew Hutchins in July this year. We are both passionate about emerging technologies and wanted to engage with the Queensland section members through events covering cutting-edge technologies such as blockchain and the Internet of Things.

Thanks to funding from R10 PAC challenge that we applied to, we organised two events.

The first event was on the topic **How Emerging Technologies are Changing the World** was organized in collaboration with Engineers Australia who kindly provided their venue. The event was a 3-hour panel discussion with a short networking break. Invited panelists were pioneers and seasoned professionals among the top people in their respective industries. Together they were aiming to separate the hype from tangible technologies of the future. The focus was on cutting-edge technologies and how they are affecting our everyday lives, economics and jobs now and in the future. The panel discussion was led by the group Vice-Chair Matthew Hutchins. Together 65 people attended the event out of which about half were IEEE members.



The second event intended to provide a technical introduction to blockchain technology. The topic was **Introduction to Certifying Unique Items on the Blockchain** and was held at University of Queensland in early November. The event had two parts.

- First part, introduction to blockchain technology, was led by group Vice-Chair Matthew Hutchins. The audience seemed to be very engaged and asked many questions that carried

on to break time while enjoying refreshments funded from the R10 PAC challenge.

- Second part was about the application of blockchain technology in combination with virtual reality presented by CEO of Vito token Mikey Robertson.

In the upcoming year, we would like to open the scope of this group to all emerging technologies and engage with IEEE members from various backgrounds bringing events on the latest trends in the technology space.



Control Systems/Robotics and Automation Societies



Wail Mahmod Lafta
waelwe@yahoo.com

Committee:

Chair: Wail Mahmod Lafta
Vice Chair: Vacant
Secretary: Vacant

2019 was a very successful year for Control Systems/Robotics and Automation Societies Chapter as the chapter organised 3 events hosted at Griffith University and the Queensland Centre for Advanced Technologies. Several IEEE QLD members, non-members, academic and professionals joined these activities.

On 20 August 2019 at Griffith University, Professor Minyue Fu from the University of Newcastle presented his research (Distributed Algorithms for Networked Control Systems). In this lecture, he outlined that in many applications a network of autonomous agents holds eminent promises to achieve a desired level of performance, capability, robustness, and efficiency beyond what a single agent can achieve. However, to be advantageous, multiple agents must work in a coordinated and synchronized manner. This talk considered a network of agents (or sub-systems) and sought a distributed algorithm to steer the agents so that a global objective is achieved.



Some attendees with the lecturer

On 23 Sep 2019, the Control Systems, Robotics and Automation chapter along with CSIRO's Robotics and Autonomous Systems Group/ Queensland Centre for Advanced Technologies co-sponsored an invited talk by Dr. Benjamin Morrell from NASA's Jet Propulsion Laboratory.

Dr. Benjamin's lecture was about (Robotics Activities at NASA's Jet Propulsion Laboratory). He said that NASA's Jet Propulsion Laboratory is famous for flagship space exploration missions such as the Mars rovers, the Cassini mission to Saturn and the Voyager spacecraft journeying beyond the solar system. While these activities take up a large portion of the laboratory, there is also a substantial proportion of the lab devoted to research, and, in particular robotics research. This research has a focus on field validation, testing and deployment to move technology along the pipeline from papers to technology ready to be integrated on future space missions. This talk gave an

overview of some of the robotics activities at JPL, both flight and research.



The Dr. Benjamin Morrell lecture at Queensland Centre for Advanced Technologies

On 11 October 2019 at Nathan Campus at Griffith University, Seyed Eman Mousavinejad presented his research (**CYBER-PHYSICAL ATTACK DETECTION AND RESILIENCY FOR NETWORKED CONTROL SYSTEMS**).

Eman said that owing to heterogeneous IT components and open network connections among controllers, sensors, actuators, and other networked components, the Confidentiality, Integrity, and Availability (CIA) of exchanged data in a Networked Control System (NCS) may suffer from vulnerability to malicious cyber-attacks. Undoubtedly, this kind of threat is mainly launched by an adversary in either the physical world or the cyber-space with the aim of substantial economic benefits or disrupting human life. Therefore, it is imperative to properly address security issues of NCSs to ensure their reliable and safe performance.

Microwave Theory & Techniques/Antennas & Propagation Societies



Antony Liu
lui@ieee.org

Committee:

Chair: Antony Liu
Vice Chair: Hugo Espinosa
Secretary: Anthony Stancombe

The MTT-AP joint chapter had another successful year with 11 events organized.

The chapter organized eight high quality professional seminars with topics ranging from microwave radar sensing, medical diagnosis using microwave sensing techniques, antenna design as well as laser and sonar imaging.

In February, Professor Mikael Persson from Chalmers University of Technology in Sweden presented his recent research in microwave sensing for stroke and trauma diagnosis. In March, Dr. Markus Gardill (MTT-DL) from Germany presented a seminar on automotive radar from a signal processing perspective. In June, Prof. Buon Kiong Lau (AP-DL) and Associate Professor Oscar Quevedo-Teruel (AP-DL), from Lund University and Royal Institute of Technology in Sweden respectively, presented their research findings on Terminal Antenna Design for Future Wireless Systems and Lens Antennas. In August, Professor Kin-Yip Wong from the University of Hong Kong presented his research in shortwave infrared laser for imaging. We also had Professor Caray Rappaport (AP-DL, IEEE Fellow), who presented two technical seminars on microwave sensing techniques that apply in biomedical applications and underground tunnel localization using synthetic aperture radar. In September, Dr. Thomas Fickenscher from Germany

presented his research in synthetic aperture sonar imaging.

Other than professional seminars, the chapter organized two “educational” events in May. The chapter invited Altair FEKO to host a one-day training workshop about their high frequency electromagnetic solver package. This event allows students, researchers and engineers to learn and master FEKO software packages for their project. Together with the educational chair Rasoul Garmabdari, the chapter also hosted a professional development seminar. Associate Professor Nemaï Karmarkar from Monash University presented a seminar about harmonizing engineering education.

This year the theme for IEEE Queensland section is “Industry Engagement”. We organized an industry engagement seminar with speakers from leading microwave electronics companies locally in Brisbane, L3 Micreo and Infinite Electronics, to share with us some of the challenging technical problems that they are working on. This provides an excellent opportunity for our members to gain better insight into the microwave and antenna engineering industry in Australia.

In summary, the chapter has conducted a series of technical seminars by Distinguished Lecturers and leading expert in applied electromagnetism, as well as three professional events with educational

and industrial focus. The chair would like to take this opportunity to thank all our committee members for their support in organizing such a nice variety of events, as

well as our members and guests who participated in these events. We look forward to organizing more technical and professional events in 2020.

Mu Kappa Society



Lucas Rabenhorst
l.rabenhorst@uq.edu.au

Committee:

Chair: Lucas Rabenhorst
 Vice Chair: Joshua Riddell
 Secretary: Ruiyuan Zhang
 Treasurer: Sameera Samarasinghe

IEEE HKN Mu Kappa Chapter had a productive year this year. This year, Mu Kappa saw the induction of two new members at the induction ceremony held on 15 May. The two new members were:

- Ms Indira Alcaide-Godinez
- Ms Sangbida Chaudhuri

After the induction, the AGM was held, where the outgoing executive committee presented on the events of the previous year. Then the election for the executive committee of 2019 was held. Mr Lakshitha Naranpanawe served as the election commissioner. The newly elected committee is:

1. Chair: Mr Lucas Rabenhorst
2. Vice Chair: Mr Joshua Riddell
3. Treasurer: Mr Sameera Samarasinghe
4. Secretary and Media Officer: Mr Ruiyuan Zhang
5. Faculty Advisor: Prof Tapan Saha



Induction Ceremony

University tutoring

At the end of semester 1, 2019, two IEEE HKN members participated as volunteers to be tutors for the Electromechanics & Electronics (ELEC2003) course at the UQ

St Lucia campus. Over a period of four hours, the IEEE HKN tutors provided tutoring support for about forty-five students at an end-of-semester review session.

The tutoring event was an opportunity to promote HKN and the Mu Kappa chapter to the UQ undergraduate student community, where the students were informed about the mission and vision of HKN and the requirements to become a member of the Mu Kappa chapter.



University Tutoring

Talk and Video Conference with UCSI

On 26 September, Mu Kappa chapter hosted Mr Harry Hoon, the chair of HKN Mu Alpha chapter at UCSI University in Malaysia. Mu Alpha received the outstanding chapter award from 2014-2018. Mr Hoon gave a presentation, while

members from Mu Alpha video conferenced in from Malaysia.

Mr Hoon presented the key factors that helped Mu Alpha achieve the outstanding chapter award. He talked about their mission and vision, flagship events, industry collaborations, and their trainee program. He also talked about the chapter's future.

Following the official proceedings, Mu Kappa talked with Mr Hoon about possible strategies specific to Mu Kappa to help improve member participation and industry connections.



Talk and Video Conference with UCSI

Visit to UQ Gatton Solar Farm

On 30 September, a bus of around 20 people from IEEE-HKN and IEEE UQ PES Student Chapter visited the UQ Gatton Solar PV Research Facility. The event was co-organised with IEEE UQ PES Student Chapter and IEEE UQ Student Branch.

The tour provided an opportunity to learn about renewable solar PV technology and design and implementation challenges in solar research. Prof Tapan Saha gave a talk on the history and operation of the research facility, and the visitors toured the solar arrays. The event was sponsored by UQ Solar and IEEE Queensland section.



Visit to UQ Gatton Solar Farm

3D Printing workshop

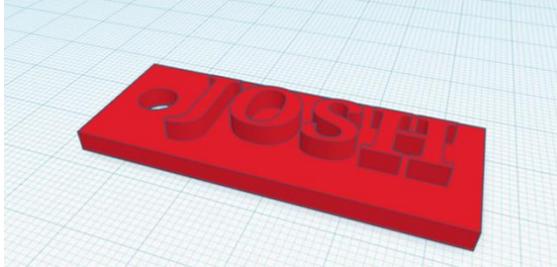
On 28 October 2019, Mu Kappa visited 26 primary school students at Jinibara State School for a practical introduction to 3D printing.

First, the students learned about some projects the Mu Kappa members had worked on at organisations such as CSIRO. Then, they were shown how 3D printing works and can be used to speed up and improve product development.

After the introduction, students prototyped their own designs on paper and discussed how it would be 3D printed. They thought about the constraints of the printing process. Then, each student designed their own personalised keyring in CAD software. Each design was 3D printed at the end of the class.

The students had a taste of mechanical design, and the teachers were shown how to use the school's new 3D printers, to help students benefit from it in the future. A short thankyou letter from some students is attached below.

Thank you for teaching us how to use the 3d printer. Our class really liked you and liked all your knowledge. Thank you for teaching us how to use and control Tinkercad. We hope you can come back soon.



3D Printing Workshop

Visit to Noja Power and Tritium

On 1 November, Mu Kappa and IEEE UQ PES student chapter organised a site visit to Noja Power, a medium voltage recloser manufacturer, and Tritium, Australia's leading electric vehicle DC fast charging station manufacturer. The visit was a great opportunity for the UQ students to tour the factory facilities and learn about the processes of these two companies in the Brisbane area.

Glen Harris for Noja Power and Paul Sernia for Tritium lead the tour and encouraged the students to send in their CVs for future job opportunities. IEEE PES and Mu Kappa thanked Noja Power and Tritium with an IEEE token.



Visit to Noja Power and Tritium



Power Electronics/Industrial Electronics/Industry Applications Societies

Mahinda Vilathgamua

mahinda.vilathgamuwa@qut.edu.au

Committee:

Chair: Mahinda Vilathgamua
Vice Chair: Junwei Lu
Secretary: Seyyed Ali Pourmousavi Kani
Treasurer: Mohammadhossein Etesami

Queensland IAS/IES/PELS joint chapter has successfully organized several seminars alongside co-sponsoring monthly QUT PECT seminars in 2019.

A presentation on “Harmonic Balance Method for Modelling and Analysis of DC-Biased Power Transformer in HV Power Systems and Renewable Energy Systems” was delivered by Prof Junwei Lu from Griffith University at QUT Gardens Point campus on the 8 February 2019. Junwei is an IEEE Senior Member and ICS Board Member. He introduced the Harmonic Balance Finite Element Method (HBFEM) for modelling and analysis of DC-biased power transformers including nonlinear magnetic fields. His contribution provided a high-quality approach to mitigate the harmonics caused by DC-biased transformers in HV power systems and renewable energy systems. We had about 17 participants for this event.

In April, we hosted Prof. Leo Lorenz who is a technology advisor for new power semiconductor devices at Infineon Technologies, Munich. He delivered a speech on “Development Trend of Si and WB Devices” in the Senate Room, Building 61A, UQ. He discussed the potential development of power devices based on Si

and WB technologies in fields such as renewable energy technologies, E-Mobility and SMART Factories. In particular, he stressed the contribution of fast and ultrafast switching devices to the future challenges in terms of efficiency, power density, reliability and cost for future applications. A total number of 30 participants attended this presentation.

A half-day workshop was then arranged with the topic “Stacked Multilevel Inverter Topologies for Variable Speed Drives Applications” on 22 July at QUT. We were privileged by hosting Prof K. Gopakumar who is a Distinguished Lecturer of IEEE Industrial Electronics Society (IES) from Indian Institute of Science, Bangalore. He focused on some of the recent work from his lab on five-level, nine-level and forty-nine level inverter topologies with reduced DC-link voltages for variable speed drive applications. He also had a discussion on the elimination of the common point voltage fluctuations due to stacking of cells with a normal six-phase IM drive. 30 people participated in this seminar.

Finally, IEEE IAS/IES/PELS joint chapter has co-sponsored seminars hosted and organized by QUT’s Power Engineering Discipline which are being held on the first

Friday of each month in GP-Z-1064 at 12:00pm:

1. "Upsetting Australia's Energy Balance" presented by Assoc/Prof Geoff Walker from QUT on 1 February.
2. "Superconducting Electric Machines: Enabling Future Propulsion Systems with Advances in Conductor Technology" presented by Mr Peter O'Brien from QUT on the 1 March.
3. "BMW Electric Vehicle Story" presented by Diplo. Ing. Volker Richter from BMW on the 29 March.
4. "Voltage Management on Distribution Networks with High PV Penetrations" presented by Mr Peter Kilby from ENERGEX Ltd on 3 May.

5. "Smart Grid Protection: Threats and Potential Solutions" presented by Dr Zahra Jadidi from QUT on the 7 June.

6. "New Features for Grid Operation" presented by Professor Gerard Ledwich and Dr Yateendra Mishra from QUT on the 5 July.

7. "Renewable on the Distribution Network: Synchrophasors Offer a Solution" presented by Mr David Dart from NOJA Power on 2 August.

8. "Blockchain for cyber-physical systems: enabling distributed energy trading" presented by Professor Raja Jurdak from QUT on 6 September.



Power and Energy & Dielectric and Electrical Insulation Societies



Tapan Saha
saha@itee.uq.edu.au

Committee:

Chair: Tapan Saha
 Vice Chair: Chandima Ekanayake
 Secretary: Hossein Etesami
 Treasurer: David Batterham

IEEE PES-DEIS Joint Chapter of Queensland had another productive year with many activities.

Our major activities were as below:

1. Planning Meeting

A planning meeting for 2019 was held on 8 March. The meeting was attended by Tapan Saha, Chandima Ekanayake, David Batterham and Nilesh Modi. The planning covered arranging site visits and a workshop with a focus on the application of energy storage. Other discussions at the meeting were:

1. How to increase educational activities by collaboration with IEEE University student Branches including the UQ PES Chapter.
2. Joint technical seminars with Engineers Australia.
3. Conducting a senior membership drive for membership development.
4. Awards for PESGM 2019 Travel award for students, outstanding Engineer award and outstanding PES Volunteer award.
5. How to provide some DEIS related activities with either site visits or seminars.

2. Technical Seminar 1: Aspects of Data Science at Redback Technologies

Dr Richard Bean of Redback Technologies gave a presentation with a title of Aspects of Data Science at Redback Technologies, on Tuesday 2 April 2019. The presentation

described a smart solar inverter system with battery which can operate in an automatic mode or receive commands over a network to charge and discharge at a given rate. A novel battery scheduling algorithm for residential consumers of solar energy was described and future research directions for the Redback Technologies Research Centre in the Network Intelligence area were outlined.



Dr. Richard Bean of Redback Technologies

3. Technical Seminar 2: Electrical Safety for Stringing Conductors on Transmission Lines

Speaker: Mr Tony Gillespie

This was a joint event with Engineers Australia, Queensland Electrical Branch
 Venue and Time: HAWKEN AUDITORIUM
 LEVEL 1, 447 UPPER EDWARD ST,
 Brisbane, 02 July 2019 06:00 PM

Abstract: Serious electrical shocks have occurred during transmission line stringing activities in Australia over the last 20 years. Unfortunately, there are no standards or guidelines that adequately cover the

electrical safety aspects associated with stringing. This talk discusses and explains the electrical hazards associated with stringing, including magnetic and electric induction, transferred potential rise, direct contact and lightning.



Mr Tony Gillespie is being introduced by Mr Keith Callaghan

4. Technical Seminar 3: An overview of the standard industrial practices for monitoring and control of large-scale solar farms

Speaker: Mr. Ritesh Anand, Weidmueller
25 July 2019 10:00 AM; Room 78-420;
Staff House Road, the University of Queensland

Abstract: This talk provided an overview of industrial practices in the development of monitoring and control systems for large scale solar farms. The talk discussed considerations for standards/design parameters applicable to Combiner Boxes, SCADA and communications interface. Some key points about installation, operation and maintenance was discussed with the help of some real-world case studies.



Mr. Ritesh Anand, Weidmueller

5. Technical Seminar: A Technical Session on Battery technology took place on Wednesday 28 August 6 PM, at Abel Smith Lecture Theatre at the University of Queensland. This was jointly done with UQ ENERGY EXPERT SEMINAR

Three speakers spoke on the occasion. They are: Mr Paul Liddell, Chief Technology Officer, Redback Technologies, Mr Stephen Richardson Senior Technology Innovation Engineer, Ergon Energy and Mr James Lindley, Group Manager, System Capability, AEMO. Mr Paul Liddell's topic was 'Batteries are Half the Answer', then Mr Stephen Richardson's topic was 'Energy Queensland's Experience Using Battery Storage to Support Network Supply'. Final speaker of the evening was Mr. James Lindley, and his topic was 'Battery Storage in the NEM'. Thanks to three speakers for their excellent presentations and subsequent Q&A from the full house audience



Tapan Saha with three speakers

6. Technical Seminar: Electrical Branch of Engineers Australia/IEEE/ITEE/IET Annual Manufacturing Lecture on 11 September Wednesday 5-30pm; Topic:

Fast Electric Vehicle Charging Stations by Tritium Experts., HAWKEN AUDITORIUM, LEVEL 1, 447 UPPER EDWARD ST, Brisbane. Announcement will be made in due course.

Queensland Electrical Branch of Engineers Australia (EA), along with ITEE Branch of EA, IET and IEEE Power & Energy Society Chapter of Queensland have jointly organized the 2019 annual manufacturing Lecture: 'Local EV Charging in a Global Context', which was presented by Dr Paul Sernia, Chief Product Officer and co-founder of Tritium. Paul had an excellent presentation on EV charging infrastructure focusing both local and global scenarios, which was followed by an interesting Q&A session.



Tapan Saha introducing the speaker.

7. Technical Seminar: Dr. Sudarshan Dahal (Powerlink) state estimation and its emerging challenges focusing on Powerlink experience "Emerging challenges to state estimation of power systems" 29 October-2019, 11am-12pm 49-502, The University of Queensland.

Power system measurement data are processed to estimate real time powerflow model using network functions and statistical estimation techniques. This state estimation process provides the necessary model required for running dispatcher power flow, contingency analysis, fault level calculations and formulating operations strategies. Modern power systems are facing new challenges to state estimation and power system security. This presentation highlighted a review of power system state estimation, its application to power system security assessment and the new challenges to state estimation due to imminent structural changes to power systems.



Dr. Sudarshan Dahal giving his talk.

8. Technical Seminar: Ravidutt Sharma (Digsilent), Continuous Uninterrupted Operation (CUO) Rule and its impact on Solar Farms;
12 November-2019 11am-12pm 49-502, the University of Queensland

In the past few years, Australia's power system has seen unprecedented change with the integration of RE. With many utility-scale solar farms getting connected to the grid, the requirement to comply with the National Electricity Rule is getting stricter and the interpretation of the rule is evolving. The requirement of reactive power capability of solar farms as per section S5.2.5.1 of the NER was discussed in this presentation. Ravidutt Sharma has been working in the power industry for 10+ years. In 2015, he moved to Australia and completed his Master's degree in Power Systems from the University of Queensland. Since 2016 he has been working with DlgSILENT Pacific Limited (Power System Engineering and Software consultants), working mainly on grid connection studies for solar farms and generator performance testing along with other power system studies like arc flash assessment, protection coordination studies, power quality studies etc.

9. Technical Seminar: Tuan Vu (Powerlink) "Challenges of Network Control and Protection Systems in modern Power Systems i.e. with more integration of renewables / DERs
10-December-2019 11am-12pm 49-502, the University of Queensland

Tuan Vu is currently a Senior Digital Asset Strategies Engineer at Powerlink

Queensland, with more than 22 years of experience in the electricity supply industry. He has extensive knowledge and practical experience in Asset Management, Project Management, SCADA, Automation Systems, Power Systems Voltage Control and Reactive Power Management. He successfully led multi-disciplined project teams and delivered capital projects in excess of \$150M.

IEEE PES Travel Awards

Three students were selected for this year's IEEE PES Travel award to attend the IEEE PESGM 2019 held in August 2019 at Atlanta, USA. They received \$1,333 each for their expenditures to attend this conference.

The students are:

- Mohammad Imran Azim
- Muhammad A. Ansari
- Sameera Samarasinghe

IEEE PES QLD Chapter Outstanding Engineer Award 2019

We are pleased to announce that the IEEE PES-DEIS joint Chapter of Queensland has selected Mr. Keith J. Callaghan for 2018 Chapter Outstanding Engineer Award 'For dedicated service to the power industry in the area of transmission lines and substations.

Congratulations Keith for your dedication to the power industry.

IEEE PES QLD Outstanding Volunteer Award

We are pleased to announce that IEEE PES-DEIS joint Chapter of Queensland has selected Mr. David Batterham for 2018 Certificate of Appreciation *'for dedicated service to IEEE PES-DEIS Queensland joint Chapter'*.

IEEE PES Conference in Brisbane in 2021

The International Conference on Innovative Smart Grid Technologies (ISGT Asia 2021), sponsored by the IEEE Power & Energy Society (PES), will be held from 8-11 June 2021 at the Brisbane Convention and Exhibition Centre in Brisbane.

IEEE PES University of Queensland Student Branch:

UQ PES Student branch had a very successful year with numerous technical seminars, site visits and other activities under the leadership of the Branch Chair Sameera Samarasinghe. PES Chapter Chair Tapan Saha as the adviser of the branch have assisted them in several activities.

Power & Energy Society (PES) Conference Travel Prize 1

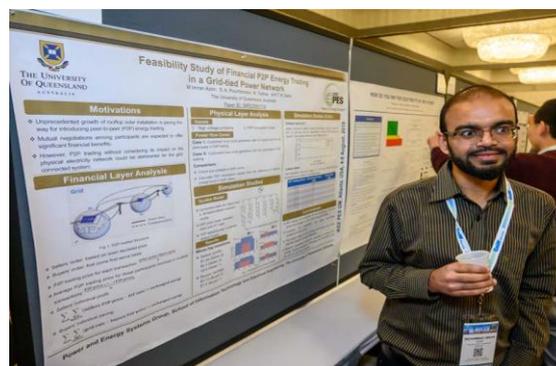


Mohammad Imran Azim
Research Student
The University of Queensland

I have been honoured to be awarded with IEEE PES Queensland Chapter Travel Award to attend the IEEE PES General Meeting (PESGM) held at Atlanta, GA, USA on 4-8 August 2019, which is the leading IEEE conference in Power and Energy systems research domain. In 2019, the theme of this conference was chosen as 'Expect Uncertainty! Prepare to Adapt'.

I presented my paper titled "Feasibility Study of Financial P2P Energy Trading in a Grid-tied Power Network" in both general and student poster sessions. Since current P2P trading research at the household levels is dependent on the energy management of rooftop solar PV production, I got an opportunity to highlight the recent solar PV growth in Australia and also emphasised the necessity of P2P trading to incentivise the residential customers. More importantly, a number of renowned researchers gave me their valuable advices to improve my work further.

IEEE PESGM provides a platform to exchange information with world leading researchers in each and every domain of power systems. I was particularly interested to meet with the researchers dealing with local energy trading and management. I attended most of the



sessions related to my current PhD topic and got the chance to discuss further with the presenters to know the research focuses of different universities and countries. The conference also attracted several industry people and they ran a few sessions to motivate students to carry out industry-oriented research to benefit the community in practice. In summary, PESGM is a well organised conference that can benefit research students greatly.

To end with, I would like to express my cordial gratitude to the IEEE PES Queensland Section for the financial support, which permitted me to participate in the conference and gain some great experiences to develop my professional skills. I hope the section will continue supporting Queensland research students in upcoming years.

Power & Energy Society (PES) Conference Travel Prize 2



Muhammad A. Ansari
Research Student
The University of Queensland

This year, I was honoured to receive the IEEE PES Queensland Chapter Travel Award. This award allowed me to attend the leading power and energy conference i.e. IEEE PES General Meeting on 4-8 August 2019 in Atlanta, GA USA and spending some time at one of the leading transformer insulation manufacturer from 9 August to 13 September 2019 in St Johnsbury, VT USA.



During the PESGM Conference, I presented my work on “Performance Evaluation of Fibre Optic Sensors to Measure Moisture in Transformer Insulation”. Our work was also selected among the best conference papers in the PESGM. The conference also provided me

the opportunity to present my work among the power and energy leaders. It was able to learn and network with several researchers, academics and industry professionals from around the world. I enjoyed attending several sessions such as talks about the future grids, asset management, transformers and transmission & distributions. It was a great experience for me, and I gained invaluable experience.

In the second part of my travel, I visited Weidmann Electrical Technology Research & Development lab and their manufacturing facility. I spent five weeks there learning about the different transformer condition monitoring tools and the development process. I briefly learned about the product development and testing phases. I was fortunate to test my optical fibre sensors in their laboratory using their lab facilities. The testing in their lab



boosted my confidence and I gained more confidence in the research I am doing at The University of Queensland.

Finally, I would like to express my sincere gratitude to IEEE PES QLD Section for supporting my travel.

Power & Energy Society (PES) Conference Travel Prize 3



Sameera Samarasinghe
Research Student
The University of Queensland

The IEEE Power & Energy Society General Meeting (IEEE PES GM Conference) was held at Hilton Atlanta, Atlanta, Georgia, USA from 4 to 8 August 2019. The theme of the meeting was: Expect Uncertainty and Prepare to Adapt. The IEEE PES GM is the top conference for those who are working in Power and Energy Systems. This conference attracts many researchers, engineers from around the world annually. So, IEEE PES GM is a good place for young researchers like us to make networking.

I attended to this conference to present my investigations on **“A Study on On-load Tap Changer Selector Switch Failure Mechanism Caused by Silver Sulphide Corrosion using Finite Element Modelling”**. This paper was selected for poster presentation under the transformer category. During a poster session, I met many people from industry (such as ABB and MR) as well as academia. Some of the industry people showed a high interest on my current project and we exchanged useful information for the project on which currently I’m working.

IEEE PES GM is the largest and most competitive conference in the field of Power and Energy system. It attracts hundreds of researchers and engineers from around the world. Which makes it a great opportunity for networking, as was the opportunity to learn from experienced experts. I had an invaluable time to discuss my current research with such experts. Their comments and advice towards my particular dilemmas and projects gave me

a good understanding and a good way to explore new thinking.

The conference exhibits the latest issues and technical information from both academia and industry. Therefore, there were many, technical sessions and panel sessions. I was particularly interested in sessions on “Taking the Mysteries out of High-Voltage Testing: A Practical Implementation Guide for Users of IEEE Standard 4” and “Surge Protective Devices Committee Poster Session”.

I was very pleased with the conference attendance and felt it was well worth participating. I had an invaluable experience throughout the conference and with the people I met. The conference was very organized, and the speakers remained neutral, making the information extremely valuable.

Finally, I want to express my sincere gratitude to IEEE PES Queensland Section for supporting me to participate in the conference. The financial support benefited me greatly. I hope the scholarship continues to support other research students to obtain such value

from the conference.



The University of Queensland Group attended to IEEE PES GM 2019

Women in Engineering



Negareh Ghasemi
n.ghasemi@uq.edu.au

Committee:

Chair: Negareh Ghasemi
 Vice Chair: Marie-Luise Wille
 Secretary: Hanxiao Zhang
 Treasurer: Vacant

Events have been held:

IEEE Women in Engineering QLD section held two professional events including a Welcome Lunch in collaboration with UQ WIE. The event was held on UQ open day (around 40 new female students attended this event). The participants were eager to learn more about IEEE and UQ WIE activities. We had a chance to introduce IEEE WIE and we encouraged new students to become a member of IEEE WIE society.



The second event was “academia and industry from two professional electrical engineers’ point of view”. We invited two professional Electrical Engineers, Dr Martin from UQ and Dr Mokhtari from Deloitte consulting company to talk about their experiences, views and observations from being in academia and industry. Our guest speakers talked about their opportunities and challenges experienced in both industry and academia. This event was very well appreciated by attendees.





Upcoming events:

In addition, the IEEE WIE team is planning to host one more event before the end of this year. The next IEEE WIE event is WIPE panel discussion (forum) will be held during the 9th International Conference on Power and Energy Systems (ICPES2019) on 12 December 2019 in Perth.

QUT Student Report



Tara Shabab
t.shabab@qut.edu.au

Committee:

Chair: Tara Shabab
 Vice Chair: Babak Jeddi
 Secretary: Jenniffer Zapata Giraldo
 Treasurer: Mohsen Khorasany

Connect with us and follow us on:



IEEE QUT Student Branch Activities

New executive committee members have been elected and introduced to the Queensland section in February 2019. The new committee had their first meeting in February to discuss their 2019 plan.

In March, IEEE QUT student branch held a seminar, “bioinspired biofabrication in cardiovascular tissue engineering” by Mr. Navid Toosi Saidy, a PhD candidate at QUT. In this seminar, Navid explained how tissue engineered heart valves could overcome the disadvantages of current heart valve prosthesis by providing an alternative mechanically stable valve that also supports tissue growth and remodelling.



In May, IEEE QUT student branch had a joint event with IEEE Engineering in Medicine and Biology Society, “The potential of motion sensor signals for early detection of health problems in elderly people”.

In this seminar, Prof.Dr.med. Hugo Saner from the University of Bern, Switzerland explained how continuous assessment of physical activity could help in detecting health changes and allow for better management of physical activity.



In August, IEEE QUT student branch, IEEE Engineering in Medicine and Biology Society, and IEEE Signal Processing/communication Societies held a joint seminar, “Guiding rational vaccine design using machine learning”. In this seminar, Prof. Matthew McKay from Hong Kong University of Science and Technology described how advances in machine learning could aid the rational design of vaccines.



UQ Student Report



Rohith Nunna

Committee:

Chair: Rohith Nunna

Vice Chair: Ricky Nguyen

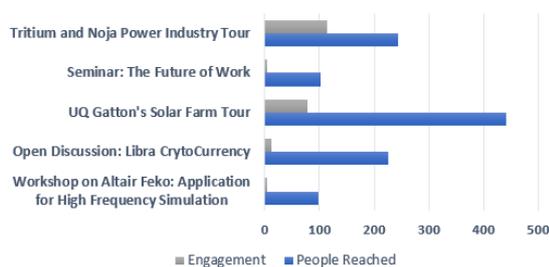
Summary

In 2019, UQ Student branch (SB) has endeavoured to reach out to more students studying engineering at the University of Queensland. This was achieved by engaging students and allowing them to have:

- Onsite experience at UQ Gatton's Solar Farm
- Industry tours at Tritium and Noja Power
- Various industry seminars and workshops advertised through-out the year
- Membership drive event

UQ SB, in collaboration with UQ PES, this year has reached over 1100 students and alumni and with over 200 engagements and participation.

UQ SB 2019 Event Stats



UQ SB will continue to expand its reach through interactive experiences that inspires students to get involved in electrical engineering and give them the opportunity to understand engineering in the industry.

Event Snapshot: UQ Gatton's Solar Farm Tour



UQ Gatton's solar research facility is one of the largest and most sophisticated facilities for pilot-scaled-systems-level PV research globally. IEEE UQ Student Branch worked in collaboration with IEEE UQ PES Student Branch to help educate attendees about the future of power and the challenges involved with increasing renewable generation connections coupled with the future decline of coal-fired-power plants in the Australian electrical network. Tapan Saha helped impart knowledge to students in an in-depth seminar. With over 30 participants, this was a successful event.

Event Snapshot: Noja Power and Tritium Industry Tour



IEEE members and UQ students had the opportunity to visit Noja Power and Tritium for an industry tour. Here we learnt the innovative technology of intelligent switchgear and electric vehicle charging

that are dominating their markets. From informative seminars to touring through the manufacturing facility, this was an unforgettable experience. Students had a unique experience to tour, talk to engineers and even Tritium's Executive Director, Dr. Paul Sernia. With more than 20 participants, students have a holistic view of the engineering industry.



Future Goals

UQ SB wishes to continue reaching out to students at UQ to ensure that they are prepared for the real-world. To achieve this, IEEE UQ SB needs to advertise and reach out to students during Market Day, more unique industry tours and informative seminars. Students are interested in interactive experiences and events that personally benefit themselves for their studies and post-university.

UQ PES Student Branch



Sameera Samarasinghe
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Committee:

Chair: Sameera Samarasinghe
 Vice Chair: Ebby Thomas
 Secretary: Indira Alcaide

The AGM

The past year was a successful year for UQ IEEE PES Student chapter. As the first event, the student chapter organised the 2019 PES student chapter AGM on 8 January 2019 with the participation of current, past new members and the student branch advisor Professor Tapan Saha. During the AGM, a new set of committee members were elected for the year 2019. Newly elected committee members are Sameera Samarasinghe as Chair, Ebby Thomas as the vice-chair and Indira Alcaide has appointed as Secretary.

Membership drive at UQ 1st year engineering student orientation



The Second event in 2019 was UQ IEEE PES student chapter representing IEEE QLD section in a First-Year Engineering Student Orientation day organized by the Faculty of EAIT, The University of Queensland on 19 February 2019. This was a great opportunity for UQ IEEE PES Student chapter for promoting IEEE among the fresh Engineering undergraduates and many new students visited our stall to learn about IEEE and its membership benefits.

Social event (Clean Up Australia)

The third event of the UQ PES student chapter was a social event. The event was organised for 16 March 2019 in celebration with “**Clean up Australia Day**” and UQ IEEE student chapter, PhD students from UQ PES group, their friends and family members cleaned up Guyatt Park, St Lucia. It was a successful event and we are proud of ourselves for giving something back to Mother Nature by cleaning the



environment.

Celebrating the IEEE PES Day



The most recent event was celebration of the **2nd Global IEEE PES day** with UQ IEEE PES student members on 30 April

2019. Our advisor Professor Tapan Saha addressed the attendees highlighting the history of IEEE and IEEE QLD chapter.

UQ Gatton Solar PV plant visit



On 3 September 2019, UQ IEEE PES student chapter organised a field visit to the UQ Gatton Solar PV plant which, is one of the largest solar PV research facilities in Australia. This Solar PV facility is equipped with fixed, single-axis, dual-axis solar panels and battery storage system. So, it was a great opportunity to both undergraduate and postgraduate students who are working in electrical and power systems engineering. 23 IEEE Student members attended this event. Prof Tapan Saha explained the theoretical stuff and then gave an informative talk on the future of renewable energy in Australia. The event was funded by both IEEE Queensland section and UQ Solar. This event was a very successful event and we received



100% positive feedback from the attendees.

Tritium and Noja Power visit



On 1 November 2019, UQ PES student chapter organised two field visits to two Queensland based, leading Australian manufacturing companies **Noja power** and **Tritium**. Noja power is the Australia’s largest medium voltage switchgear manufacture. Tritium is a leading electric vehicle DC charging station manufacture in the world. Both companies are founded by Australians and currently exporting their products all around the world. Not only that both companies are doing number of research and development activities. As both companies situated next to each other, to save both money and time we combined the two field visits and held on same day. Both visits were extremely informative and students learnt bunch of things about manufacturing and how research and development have been used in industry. 23 IEEE Student members were attended to this event.



RTDS for Power System Research

This event was held on 5 November 2019 at Renewable Energy laboratory of The University of Queensland. This event was a combination of technical talks, practical demonstrations and a laboratory visit. Dr Feifei Bai who has vast experience on



using digital real-time simulators (RTDS) in power system simulations conducted this event. This was a very informative technical event to postgraduate students who are working in power system engineering. After the technical talk Dr Feifei conducted a demonstration on how to implement a power system in RSCAD and run in the RTDS. During the laboratory visit she went through the old and new RTDS cores, battery storage and other components and how those things can be used in power system research.

Future events

IEEE UQ PES are currently organizing two more events for this year. End of November the Quiz challenge and in December close up event.

So far, we have organized **7 events**. We wouldn't be able to successfully finish those events without the help of many people. So, we would like to specially thank our faculty advisor Prof Tapan Saha for guiding us toward success and IEEE Queensland Section for funding most of the events.

