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Editorial:

This is the fourteenth newsletter I've edited. This one is being edited with an old version of Libre Office – 5.4.7.2 - which is the latest version that I can get to compile on my lap-top (which is seven years old and probably due for replacement).

Note the nomination form on page 12. Do nominate for something you'd be willing to do – it can save you from being importuned to do something you'd fancy less.

We seem to have acquired a tolerably famous associate member in Michelle Simmons – see page 30.
Chairman's Message

As we reach the mid-point of 2019 I would like to thank all IEEE members that have played an active role in contributing to the success of the IEEE. Contributions take many forms such as involvement in the Section Committee, involvement with IEEE technical societies and affinity groups, being involved with the student branch, reviewing and/or submitting papers to IEEE journals and conferences, undertaking outreach activities, putting on events and simply participating in IEEE events. Membership value comes from engaging with the IEEE.

Progressing through the IEEE volunteering opportunities is an incremental process starting with small contributions that slowly - with recognition and experience - lead to bigger and better opportunities. To say thank you to those that have made large contributions to the IEEE we last year started the IEEE NSW Section Outstanding Volunteer Awards. Winning such an award is a visible recognition of your contributions and looks good in your CV or in a promotion application. Winners will also be automatically nominated for the respective Region 10 and Australia Council awards (if they meet the respective eligibility criteria), which offers an opportunity to obtain national and international recognition of your experience. Please consider an application. See page 4 for more details.

Many volunteers will not be ready to apply for a NSW award at the moment simply because they don’t have a strong enough track record of contributions. One way to build such a record is to join the NSW Executive Committee. It is that time of year that nominations open with details outlined on page 12. I strongly recommend anyone looking to give back, looking to build a diverse network, or trying to gain high level leadership experience, to submit such a nomination. My two years as Chair has been a lot of work, but the opportunities to meet inspirational leaders and decision makers nationally and internationally has been priceless and well worth all the time that I put in. Chair, Vice-Chair, Secretary or Treasurer – all offer an opportunity to make a difference and gain recognition of your capability.

In August we hold our free networking and dinner event UNITE for the second time with the purpose of uniting our members to interact and engage. Last year 160 members participated and this year we are making the event bigger by adding a professional development and technical component. We aim to have 300 members participate this year. We are also calling upon our academic and industry members to exhibit their research, product or services for the cost of a donation. For our industry members this is a great way to extract value from membership and connect the work you do with the IEEE community - see page 5 for more details. Academic members should think about the benefits of disseminating your research - many research proposals ask how you are going to do that. At UNITE you can do this to a diverse audience and for free!

The NSW Section committee continues to make strong progress with the strategic plan. You can follow the progress and the ways we are trying to bring value to membership by following progress on the Section website http://sites.ieee.org/nsw/nsw-section-strategic-plan/. Our website has been fully revamped. When was the last time you took a look at it?

One of the new initiatives in 2019 has been to start the section’s YouTube channel https://www.youtube.com/channel/UCcHapDQ69e6XXlzh2R1Ui9Q. This will provide access to recordings of NSW events that we have been given permission to distribute. While the collection is currently small it will increase with time.
We have also started to list new additions on IEEE TV to help increase awareness of many of the
great opportunities available with your IEEE membership.

It was also a great pleasure to announce in June that the NSW Section has had an IEEE Milestone
approved. A huge congratulations to the history team for this great accomplishment. The IEEE Board
of Directors approved the IEEE History Committee’s recommendation for the following citation:

_Reception of First Communication to Earth from a Human Walking on the Moon, 1969_

the Parkes radiotelescope and Honeysuckle Creek stations in Australia received voice and video
signals from the Apollo 11 moonwalk, which were redistributed to millions of viewers. Parkes'
televised images were superior to other ground stations, and NASA used them for much of the
broadcast. One of the first to use the newly developed corrugated feed horn, Parkes became the
model for the NASA Deep Space Network large aperture antennas.

Get involved and engaged and make the most of your IEEE membership today!
I wish you all the best for the second half of 2019 and hope to meet you at one of our events,
especially at UNITE2019 – register now as its free!

Sasha Nikolic
Chair, IEEE NSW Section
The NSW Section is proud to promote local awards to recognise the contribution of our members. Many members donate enormous amounts of their time spent on a diverse range of activities that benefit the IEEE membership.

If you or somebody you know has made a substantial contribution then we encourage you to apply. The following awards will be presented at the 2019 NSW Section AGM:

IEEE NSW Outstanding Volunteer,
IEEE NSW Outstanding Young Professional,
IEEE NSW Outstanding Women in Engineering Volunteer
IEEE NSW Outstanding Student Volunteer.

Such recognition looks good in your CV and can help in promotion applications. Receiving such an award is a formal recognition of your capabilities. Winners will also be automatically nominated for the respective Region 10 and Australia Council awards (if they meet the respective eligibility criteria), offering an opportunity to obtain national and international recognition of your experience.

Nominations close on the 31st of August.

More information: http://sites.ieee.org/nsw/awards-recognition/
IEEE UNITE2019

IEEE NSW Section Presents

UNITE2019
FREE Networking & Technical Event*
Uniting all NSW IEEE Members
Academia and Industry Members
Student, Affinity Group & Technical Society Members

Exhibit for the cost of a donation*

9 August 2019
Mercure Sydney Central


Cost: Free for all IEEE Members (and one partner or guest)

About: This event aims to unite all IEEE Members (Student, Young Professional, Women In Engineering, Life Members, Academia & Industry etc.) in one place with a free dinner and loads of activities focused on networking and making the most of the IEEE. Discover the latest trends, discover the opportunities offered by the various IEEE societies, discuss membership elevation options, engage with TISP and much more! More details will become available closer to the event.

Date: 09 August 2018

Time:
4:00 - 6:30pm Technical and Professional Development Program
6:30 – 8:30pm Exhibits, Poster Competition and Networking Component

Registration is a must! Numbers are Limited! You must show your IEEE membership card and confirm registration to gain entry.

More information and registration here: https://www.nswunite.org/

Exhibit for the cost of a Donation:
We are offering IEEE members an opportunity to exhibit products or services for the cost of a donation. If you are not one register for a 2019 membership before August with a 50% discount at https://www.ieee.org/

Why Exhibit: Showcase your products, research and services; Connect your company, school or faculty with the IEEE network; Engage with IEEE members, especially student members who will be looking for work when they graduate (IEEE Members that attend such events are engaged and motivated individuals); –

Discover new opportunities; and Showcase your support to the IEEE
The “star” of the acclaimed movie The Dish is in the headlines again for its unique role in the moon landing. It is now fifty years since Neil Armstrong stepped out onto the Moon’s surface and the Parkes Radiotelescope received the signal from the Moon that conveyed this event to millions of TV sets world-wide.

For this achievement, the international engineering body, IEEE, has granted Australia’s first ever IEEE Milestone. IEEE Milestones are considered world heritage items in Science and Technology, recognised by IEEE for their historical technical significance and achievements. The IEEE is the world’s largest global professional association for technology (previously also known as the Institute of Electrical and Electronic Engineers) with about half a million members worldwide.

Celebrations of the Parkes Milestone are being planned in Parkes and around from August 2019.

In May 2019, IEEE Board of Directors approved the new milestone with the following citation:

“Reception of First Communication to Earth from a Human Walking on the Moon, 1969: The Parkes radiotelescope and Honeysuckle Creek stations in Australia received voice and video signals from the Apollo 11 moonwalk, which were redistributed to millions of viewers. Parkes’ televised images were superior to those from other ground stations, and NASA used them for much of the broadcast. One of the first radio telescopes to use the newly developed corrugated feed horn, Parkes became the model for the NASA Deep Space Network large aperture antennas.”

This milestone was proposed by the IEEE New South Wales history committee, supported by the IEEE Antennas & Propagation Society, and has now been accepted.

The visitors centre at Parkes Observatory is open to the public 7 days a week.

It is located 20 kilometres north of Parkes town, off the Newell Highway (the main highway between Brisbane and Melbourne) and approximately 370km from Sydney.

From the dedicated viewing area, you can watch as the dish moves, controlled by astronomers as they explore the Universe.

A 3D theatre shows a 30 minute program of short 3D films. An AstroKids Scavenger Hunt is suitable for students 7–14 years of age and takes about 30 minutes to complete.

The award-winning Dish Café is open for breakfast and lunch every day.
About the Landing

On July 20th 1969, as astronaut Neil Armstrong set foot on the moon and said, “one small step for man, one giant leap for mankind”, the video signal from the moon was being received by NASA's antenna at Honeysuckle Creek near Canberra [1] and shortly after by the Parkes radiotelescope. This provided signals conveying one of humanity's most significant achievements, namely the first moon walk. The pictures were distributed to millions of people watching here on earth (editors note – I was one of them).

It is this historical episode, as well as of the major technical achievement of the Australian stations that allowed this to happen, that justify the recognition.

In coming into land, the lunar module, piloted expertly by Armstrong, skirted over a boulder field and landed safely in the Sea of Tranquillity [2].

After Armstrong and Aldrin had landed and had checked out all systems, the original intention had been for them to rest for about 8 hours and then explore the surface nearby. By that time the main receiving station at Goldstone, CA would have been in view to receive signals from the moon.

Understandably, the astronauts were keen to get out and explore, so sleep was out of the question. It was decided by Mission Control that they should venture out of the landing module sooner than planned.

During the broadcast of the first moon walk, NASA initially alternated between the signals being received from its two stations at Parkes and Honeysuckle Creek, searching for the best quality picture. A little under nine minutes into the broadcast, the Parkes signal proved superior.

NASA stayed with Parkes as the source of the TV for the remainder of the five-hour broadcast.

The overall technical achievement of the moon landing was immense. On the communications side [4], signals in S-band were used for continuous tracking information, analog voice transmission and digital data transmission between spacecraft and earth when line-of-sight viewing conditions existed. The Apollo telecommunications system consisted of special equipment on board the command and service module (CSM) and the LM, and the Manned Space Flight Network (MSFN) provided a variety of communications and tracking functions that fulfilled these requirements. In addition, this
system had to have a capability for television transmission from the lunar surface.

Ground stations in three countries - including Australia - were used to support the Lunar Module's powered descent and TV transmission from the moon’s surface. The Parkes radiotelescope, along with NASA's antenna at Honeysuckle Creek, was chosen to be part of the earth receiving network and these stations were fully equipped to communicate with Apollo 11. At that time, signals from the Lunar Module (LM) were being received simultaneously by the 64-metre Goldstone antenna in California, the 26-metre antenna at Honeysuckle Creek in Australia [1], and the 64-metre radiotelescope at Parkes [3].

The NASA Honeysuckle Creek station has now been dismantled. The Parkes radiotelescope is still an operational observatory and the site has been recognized as an Australian National Engineering Landmark as shown in Fig. 1.

Development of Parkes

The Parkes radiotelescope pictured in Fig. 2 is a unique instrument. It was commissioned in the late 1950s by CSIRO who set very tight specifications [3]. Freeman, Fox and Partners of London prepared a design that met these requirements and it was fabricated by Machinenfabrik Augsburg Nurnberg AG (MAN).

The driving force behind this telescope was Taffy Bowen FRS, who had very high standing because of his involvement in early radar on aircraft [5]. Amongst other things, he had carried the secret and vital component of radar, the high-power magnetron, to the US as part of the Tizard mission early in WWII.

Later, as a Chief of the Radiophysics Division at CSIRO, he was able, through his American contacts, to raise more than 40% of the cost of the telescope from the Rockefeller Foundation and the Carnegie Corporation in the United States.

Bowen wanted a steerable dish comparable in size with, and more accurate than, the 250 ft Mk I radiotelescope at Jodrell Bank in the UK, which had been completed in 1956 and was the first large steerable reflector telescope. Parkes was used as a test bed for several future radiotelescopes, then in the planning stage.

It has several unique technical features including a master equatorial - designed by Barnes Wallis FRS of WWII dam-busters fame - located in the column in the concrete tower supporting the telescope. The dish is ‘slaved’ to follow its master, which could be programmed to follow a celestial track and thus control the direction of the telescope. CSIRO scientist Harry Minnett was seconded to Freeman-Fox in London during the design phase where he made some unique contributions to the antenna structure.

The Innovations

ne contribution was that the parabolic dish at Parkes has a longer focal length than the one at Jodrell Bank. The focal-length to diameter ratio (f/D) of Parkes is about 0.41, which subtends a half-angle from the focus to the rim of 62.69° and allows more efficient horn feeds to be used. Minnett and co-worker Bruce Thomas undertook an improved and detailed analysis of a parabolic reflector and this influenced the design of Parkes and predicted the aperture field of the feed for a conjugate match at the focus [6]. This led to their development in 1966 of the corrugated feed horn for Parkes [7-8] as shown in Fig. 3. The corrugated horn has, since the 1970s, become dominant in large ground station applications. Both features and some others were first used on the Parkes radiotelescope. As well, for
the Apollo program, the original inner ring of solid panels shown in Fig. 2 were extended outwards to cover about two-thirds of the dish and this improved Parkes’ signal-to-noise ratio. Therefore, in 1969, the Parkes radiotelescope was superbly equipped to receive the small signals under adverse local weather conditions.

During the moonwalk, the reception at Parkes took place in very high winds gusting to 110 km/h (68 mph) at 60 degrees inclination, risking damage to the dish, to keep the antenna pointed at the Moon. A fictionalized account of Parkes’ role in the moon landing is dramatized in the movie ‘The Dish’ [9].

Other improvements over the years include further resurfacing of the dish, a larger focus cabin, stronger struts, a rotatable feed mount, and a 13-element multibeam feed [10] to complement new high-performance feeds.

Conclusion

When a human being first stepped onto the surface of our Moon, there was international earth station receiving network that made this singular event possible.

In Australia, the receiving stations were the Parkes radiotelescope, along with NASA’s antenna at Honeysuckle Creek near Canberra. Although Honeysuckle Creek took the first seven minutes, Parkes was the source of the remainder of the 5-hour TV broadcast from the Moon.

Parkes was used as a test bed for several future radiotelescope then in the planning stage. It has several unique technical features including a master equatorial that followed a celestial track for controlling the direction of the telescope. It has a longer focal length giving a focal length to diameter of 0.41, which allowed more efficient feeds to be used in a front-fed position. A detailed study of the focal region fields of a parabola led to the development of the corrugated horn feed, which has now become commonplace in earth station applications.

The Parkes radiotelescope and Honeysuckle Creek stations in Australia received the telemetry from the Lunar Module “Eagle”, including the first television pictures from the first moonwalk for distribution to millions of people on Earth. Parkes' TV picture quality was superior to those received at the other ground stations, therefore NASA used Parkes as the TV source for all but the first nine minutes of the over 5 hours of the TV broadcast. The Parkes radiotelescope is historically important for its contribution to the first Moon landing as well as its design and for the corrugated feed horn first used at Parkes.
ACKNOWLEDGMENT
The authors wish to thank John Sarkissian and Mal Smith and of CSIRO for their comments and supply of Fig. 1.

REFERENCES

  [https://honeysucklecreek.net/msfn_missions/Apollo_11_mission/hl_apollo11.html](https://honeysucklecreek.net/msfn_missions/Apollo_11_mission/hl_apollo11.html).
IEEE Education Society, NSW Chapter organized a workshop titled ‘A melange of industry speakers and undergraduate students’ on 11th April. This workshop was intended for the undergraduate students. It is often found that the undergraduate students have limited interaction with the industry and there is little connection between what they study in their curriculum and what is being done in the industry. To give a current industry perspective, we persuaded three industry speakers to talk to students and recent graduates who are interested in the Automation and Control Industry.

This workshop was intended to inform undergraduate students and recent graduates about the hardware and software tools commonly used in the industry, along with hints about the skill sets they might acquire to make them more attractive to the Automation Industry.

The three speakers were Pankaj Yadav (Power Control Area Manager NSW, Rockwell Automation), Nick Psahoulias (Managing Director, Beckhoff Automation Pty Ltd) and David Gardner (COO, Robohelix Pty Ltd). The workshop was well attended by students from different universities across NSW such as University of New South Wales, University of Technology Sydney and Macquarie University.

A few academics also took part in the event.

We would like to share a few photographs from the workshop:
Nomination Form for one position in the IEEE NSW SECTION
Section Executive Officers to be elected by electronic vote (by the Members);
Elected positions by Chapters and Affinity Groups (Chair/Vice Chair/Secretary/Treasurer);
Non-elected positions (appointed Officers).

Closing date Friday 31 August 2019 midnight

NOTE: Chapter and Affinity Group Committee Executive positions are elected by the respective Chapter Members.

Nomination Form Instructions:

Before completing the form, review the following guidelines for nominating a volunteer Candidate:

(a) Nominators must contact their nominee before submitting the form and confirm their acceptance of the time and other commitments required for the position.
(b) Nominees must have had at least 2 years on the Committee to nominate for the key positions of Chair, Vice Chair, Treasurer and Secretary.
(c) Nominees for Section Executive positions should be Senior Member or higher
(d) Self nominations require the submission of additional information e.g. CV or SMIEEE referee
(e) If you are nominating for more than one position, separate forms should be submitted.
(f) Please note the closing date, completed forms to be emailed to:
   Mahmoud Elkhodr
   Email:  elkhodr@gmail.com

Nominee Contact Information
Given Names:
Surname:
IEEE Email or other address
Address Line 1:
Address Line 2:
Address Line 3:
IEEE Member No.
POSITION SOUGHT:

Nominator Contact Information
Given Names:
Surname:
IEEE Email or other address
Address Line 1:
Address Line 2:
Address Line 3:
IEEE Member No.
Industrial Visit: An IEEE Opening doors Initiative

Exposure to industries is a key component for any graduate and post graduate degree. It not only expands the horizon but also creates a whole new world of opportunities and springs innovative ideas in the inquisitive minds of future young professionals.

Our IEEE student branch organized an Industrial visit to ResMed as a part of IEEE opening doors initiative. The event was a huge success with full participation and everyone enjoyed the wonderful manufacturing tour. The interactive product exhibition was, and presentations captivated the audience. A peek into the platform that solves real world challenging problems is a revelation.

This was one of the most challenging venture of our student branch and it turned out to be extremely rewarding. Students from almost all the university in New South Wales participated and we had support from all other student branches. A huge thanks to ResMed at Bella Vista and Mr. Adam Panerello for opening the doors of the industry for academia.

Submitted by: Khushboo Singh

Circuit simulation of switching power converters using GaN device models

Macquarie University is well known for its innovative research. One such project is outlined here.

The EDAC research group at Macquarie University’s Engineering department is actively involved in creating device models for the next generation of state of the art, III-V semiconductors.

ASM-GaN is such a model which has been developed by Prof. Sourabh Khandelwal, who heads the EDAC group. In this work, they measured and modelled the I-V and (ON and OFF state) and C-V characteristics of a commercial SMD (Surface Mounted Device) GaN transistor the PGA26E19BA. Using this model, they were able to run simulations of a DC-DC boost converter design at two different switching frequencies.

Designers can use this model for their specific power converter circuit topology to compare different devices from different manufacturers, by extracting the different sets of model parameters that describe those different devices. This can be used to select the best device for the specific power converter topology for a specific application.

Submitted by: Dhawal Mahajan
Share-To-Inspire series is IEEE NSW WIE initiative, started in 2017, with the aim to outreach to high school girls and motivate them to join STEM careers, with the help of the workshops and role model events.

As part of the project, we have also started collecting the role-model stories which are published on IEEE NSW WIE affinity group website, and are shared with the high school students.

IEEE NSW WIE is calling for inspiring stories from all IEEE women members. Your story, journey of STEM can help in inspiring future generation. Please send your story to naila.mukhtar@mq.edu.au. The published stories are available on IEEE NSW WIE website, link given below.


Submitted by: Naila Mukhtar (Vice-Chair, IEEE NSW WIE Affinity Group)
IEEE Macquarie University (MQ) WIE Affinity Group organised a “MQ WIE Leadership Summit”, in collaboration with local MQ WIE group on 15-April-2019, for the students and staff members of Macquarie University, and the IEEE MQ Student Branch provided voluntary support. The summit provided an opportunity to the participants to develop their leadership skills. There were over 70 participants.

The whole day event consisted of two sets of sessions with the first session targeted at industry and the second directed at academia.

The industry session opened with a keynote talk from Ms. Tracey Gramlick (Senior Analyst, CSIRO). In the afternoon session Professor Rose Amal (Scientia Professor and ARC Laureate Fellow at University of New South Wales) presented an inspiring talk about leadership lessons learned. Prof. Candace Lang shared her views about gender diversity and highlighted the need for WIE groups at local and global level.

Both keynote talks were followed by panel discussions with the theme of “Leadership in Industry” and “Leadership in Academia” respectively.

A diverse range of panel members from Academics and Industry took art in the discussions. Panel members shared their exciting experiences and gave tips on how to be a good leader. Prof. Darren Bagnall, Dean School of Engineering at Macquarie University, who was one of the panel members in afternoon panel discussion, talked about the ways he has strengthened and enhanced equal opportunity and diversity friendly policies at School of Engineering over the past year. Others who on the panel included Mellissa Hardtke (Integration Leader Raytheon Australia), Anna Gao Channel Manager (Huawei Technologies), Elizabeth Tosti (Sector Director Safework NSW), Jane Rapsey (Department Manager, Cochlear), Prof. Min Chen RC CoE (Node Leader, University of Sydney), Prof. Francesca Iacopi (Head of Communications and Electronics, UTS), Dr. Sophie Primig (Senior Lecturer and DECRA, UNSW), Dr. Shuying Wu (Senior Lecturer and DECRA, Macquarie University).

Submitted by: Naila Mukhtar (Chair, IEEE MQ WIE Affinity Group)
IEEE Women In Engineering (WIE) Activities at Macquarie University

The IEEE Women In Engineering affinity group at Macquarie University has organised several events in the first six months of 2019 to support Women in STEM, including undergraduate, postgraduate, and staff members working at Macquarie University.

In February, IEEE Macquarie University student branch and WIE AG welcomed first year engineering students. This event provided a chance to promote the IEEE and explain the benefits of being an IEEE member.

An event was organized, on 11-March-2019, International Women's day, to celebrate the achievements of women in STEM. This role-model event is intended to increase the motivation and retention of women in STEM. It also provides a networking and meetup opportunity for the Macquarie University community.

The speakers at the event included early-career researchers and renowned senior professors. Prof. Judith, Prof. Shoba, and Prof. Candace talked about their career paths and shared the valuable experiences and lessons encountered along their STEM journey. Dr. Fatemeh and Dr. Noushin shared their views about the positive research environment and emphasised that failures are a necessary part of the learning process.

The event was attended by primarily members of Faculty of Science and Engineering. Almost half of the attendees were IEEE members. This successful event enabled us to promote IEEE more effectively and we expect that it will help in our IEEE Membership drives in future.

The IEEE Macquarie University (MQ) WIE Affinity Group organized “MQ WIE Leadership Summit”, in collaboration with local MQ WIE group on 15-April-2019, for the students and staff members of Macquarie University, and was supported by IEEE MQ Student Branch. The summit provided an opportunity to the participants to develop their leadership skills. There were over 70 participants. This was a whole day event with two keynote speakers and two productive panel discussions.
MQ WIE provided volunteer support for an outreach event on the 18-April-2019, organized by the MQ School of Engineering to promote STEM to high school students. The outreach was titled “MQ in a Day” and purpose of the event was to give a glimpse of engineering to high school students. Students got a chance of having hands-on experience with the bio-medical projects. They were amazed to see how EMG signals can be used to control the robotic arm. Reading the brain signals (EEG) was another hit of the event. For further detail about the past and upcoming events, please visit MQ WIE website and follow IEEE MQ WIE on social media - links given below.

Website: https://edu.ieee.org/au-wiemq/
Facebook: https://www.facebook.com/wiemq/
Twitter: https://twitter.com/IEEEMQWIE
Instagram: https://www.instagram.com/ieeemqwie/

Submitted by:
Naila Mukhtar (Chair, IEEE MQ WIE Affinity Group)

The Social Implications of Technology

There has been much concern after the Christchurch shootings with the role played by social media in spreading hate speech and, in particular, promoting video of the shooting.

SSIT ran a series of talks in Sydney, Melbourne and Brisbane, featuring Dr Andre Oboler, CEO of the Online Hate Prevention Institute to explore responses. The challenges are technical (identifying material for removal), societal (the role of NGOs and interfaces with government and corporates), ethical (our own obligations as individuals) and legal (can/how should regulation work in this space).

SSIT also made a submission in response to the Discussion Paper on Artificial Intelligence: Australia’s Ethics Framework that was developed CSIRO’s Data61. The submission emphasised the need for greater social contextualisation of AI – understanding ethics as something more than legal principles, understanding the likely differing impacts of AI on sectors of the community, and cautioning against conceptualising AI as having moral agency.

SSIT aims to bring technical and other professionals together to discuss complex socio-technical challenges such as those presented by hate speech on the Internet. Any IEEE member is welcome to join – just tick the box when you renew your membership.

Kieran Tranter (Chair), Lyria Bennett Moses (NSW co-ordinator), Michael Guihot (Deputy Chair)
UNSW Sydney Student Branch

The UNSW has recently revived its IEEE Student Branch, and we would like to take this opportunity to extend a warm welcome to our student members, and to outline the exciting opportunities offered by the branch.

The main aim of our student branch is to act as a liaison between the broader IEEE community and our students and to ensure that all the student-based opportunities and events to be held are advertised to the potential student participants and audiences, and to further strengthen the relationship between university and industry. We hope that by encouraging students to attend and participate in these events, they will get valuable experience in applying the skills and the knowledge gained in their university courses, and further encourage the burning passion of students to acquire technical knowledge that could advance humanity.

We aim to host technical seminars showcasing work conducted in different fields. We have hosted two technical seminars this year, namely Motion Control using Program Logic Controllers (PLCs) by Dr Budhaditya Majumdar and Introduction to Electronics and PCB Design by Mr Sam Wallace. It was inspiring to hear the enthusiasm both our speakers expressed about their lines of work and they provided valuable insights into where they believe the future of their field and broader engineering will be in the future. Both events were well-attended, and it was especially encouraging to see a large cohort of enthusiastic undergraduate students join us and actively participate in the discussions.

Our events calendar for the remainder of the year includes more technical seminars and workshops (e.g. an introduction to competitive programming), IEEE Xtreme, and other social events to encourage networking between our student members. The aim of these events is not just to increase the students’ technical knowledge, but – just as important - to give them a wider perspective on the interconnectedness and mutual importance of different technologies. We encourage all students, especially coursework and research students, to support us in our endeavours by attending and taking part in our events.

Submitted by Madhuvanthi Muralidharan and Luke Sy
Digital Twins - the Role of Real-time simulation in Modern Power Systems

On the 3rd of May 2019, the IEEE NSW PES Chapter together with the joint Power Electronics, Industrial Electronics and Industry Applications chapter hosted, a lecture by Dr. Jean Belanger, CEO and CTO OPAL-RT Technologies in Canada.

The topic of the lecture was “‘Digital Twins’: How Real-Time Simulation is Helping Create the Power Generation, Power System Control and Management and Cybersecurity Solutions of the Future”. The event attracted more than 40 attendees from across Sydney and generated a lot of discussion on the role of real-time solutions in modern and future power systems and power electronics. We would like to thank Bruce Lehman and Simon Buchwald of ECADtools in Sydney for their help with organising the event.

IEEE at the 2019 UNSW EET Industry Night

The School of Electrical Engineering at UNSW Sydney run its 2019 Industry night with the participation of more than 25 local companies and attended by more than 200 students. The event was a great opportunity to also visit the newly completed second stage of the EET Building at UNSW Sydney. IEEE was present both as a NSW Section (Tony Zaglas, Colin Elston and Georgios Konstantinou) as well as the newly formed and highly active IEEE UNSW Sydney Student branch (represented by its chair Luke Sy and vice-chair Ricco Pradama).
IEEE UNSW Student Branch Joins Week 1 Showcase

The UNSW student branch joins the activities during Week 1 of the second term at UNSW and engages with undergraduate and postgraduate students across the whole university about the activities of the IEEE and the local student branch. See also page 18

IEEE UNSW Student Branch Workshop

“Thank you Sam Wallace of Thales for sharing your experiences around electronics and PCB design (many of the design stories were just on a mindblowing scale). I am pretty sure many of the students left the room with a renewed passion for electronics, are encouraged to study harder, and will definitely take regulations seriously to avoid the worse-than-jail experience.”

The presentation is available at IEEE UNSW’s facebook page: https://www.facebook.com/IEEEUNSWSB/videos/1253623838153531/

PES Conferences around R10

The 2019 IEEE PES Asia-Pacific Power & Energy Engineering Conference (APPEEC 2019) is scheduled from the 1st to the 4th of December in Macao.


The 2019 9th International Conference on Power and Energy Systems (ICPES 2019) will take place in Perth, Western Australia from the 10 – 12 December 2019. ICPES 2019 will provide a forum for academics, university researchers and industry experts in power engineering to share ideas and experiences, and discuss innovations.

Full Paper submission due date is the 17 July 2019.

More information can be found at: http://www.icpes.org/cfp.html
Joint Institutions Lecture Series – Surge Protection

On 26 March 2019 Phil Jones, Principal Engineer ERICO and Chair of SAA Surge Arrester Committee EL007-03, delivered a lecture on the Essential Elements of Surge Protection.

Topics covered included


Also discussed were the changes to IEC 61643-11 and some of the consequences.

There is no Australian Surge Protection Testing Standard and each manufacturer has their own set of tests, and the UL Standard is not relevant to Australia

IEC 61643-11 covers Testing of Surge Protection Devices including;

Voltage Clamping Level, Operating Duty, Temperature Withstand, Thermal Stability, Short Circuit Current behaviour, Temporary Overvoltage(TOV) Levels

The various Classes of Lightning Protection Levels were explained as well as specifications and markings.

Connecting cable sizes(set by fuse rating) and lengths(between 0.5 and 1m max) were dictated.

As 1768 Draft is being prepared and is to be available in several weeks.

Recommended inspections every 12 Months or after lightning strikes.

Multi-stage surge protection devices are available for sensitive electronic equipment.
There were numerous questions at the end of the lecture which the presenter did answer. The presenter kindly indicated that the presentation would be made available to attendees.

Submitted by Tony Zaglas
New and upgraded Members of the NSW branch of the IEEE

Fellows

We have one new Fellow - Professor Yonghui Li - and we gave him half a page in the March issue of Circuit

Life Fellows

We have three new (or up-graded) Life Fellows

Dagan Feng, Robert A Minasian and Professor Branka S Vucetic

Senior Members

We have thirty-one new or up-graded senior members. Sherry Moghadassi is active in the NSW executive committee, who did encourage her to up-grade to Senior Member.

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Life Senior Members

We have six new life senior members – they aren't so much up-graded into this role as have survived long enough to get moved into it. Ollencio D'Souza is a decidedly active member, deeply involved in standards.

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Members

We have 247 new or up-graded members. Naila Mukhtar is one of them who is active (and has a couple of articles in this edition of Circuit). Dushantha Nuwan Prasanna Thalakotuna is another – he is our secretary again this year. The pressures of fatherhood get reduced as the new child sleeps for longer stretches.

Rana Mohammad H
Mohammed Ajaz
Mojtaba Affan Aziz
Anthony Keith J
Justin Meriam Gay Valdendez Graeme S
Paul Peter C
Catherine Siyuan Huaming Hon Wah Mudiyansele S
Wai Tony Y
Yuk Steven Guy
John A Adelle C
Anthony
Nicolas Michael H
Greg Eric Leonard
Mark Oliver
Ziba Gabriel
Lawrence
Gregory Marie-Claude
Hemantha
Ferhat Fengxiang
Chun Adrian
Zhanwei Zhaoceng
Alfredo Farookh
Ibrahim Matthew
Mohammed Ahmed

Abbas Aghdaei
Alikhan Amjadipour
Baba Bagala
Bannister Barbour
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Cooper Coster
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Hugo Erick
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**Life Members**

We have thirteen new life members

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**Graduate Student Members**

We have 295 new graduate student members

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<th>Abdollahi Lorestani</th>
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<td>Hamed</td>
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<td>Alqahtaniu</td>
<td>Mohammad</td>
<td>Khalid</td>
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<td>Mir</td>
<td>Nahidul</td>
<td>Ambia</td>
<td>Uzma</td>
<td>Amin</td>
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</table>
Nadia
Maral
Manisha
Dilip
Sara
Mohan
Sai
Santosh
Graeme
William
Julie
Stephany
Arun
Yoann
Daniel
Gebbran
C.
Yuanxin
Bikesh
Shu
Lin
Xi
Voon
Yang
Thai
Son
Kenneth
Rajesh
Tian
Xuanyi
Anan
Rabin
Amir
Ebrahimighahnavieh
Asmaa
Md
Meftahul
Gilad
Qishuo
Ehsan
Pratul
Matthew
Andrew
Vivasha
Tharshini
Noman
Faiazul
Asrafal
Touseef
Mohammadhesam
Kang
Robin
Fernando
Mohammed
Arif
Alice
Maleen
Nipun
Lu
Jiahu
Grant
Alexander
Peng
Kanyawee
Asif
Muhammad
Talal
Ali
Tahsin
Ashraf
Talahaa
Ali

Anam
Shahzeb
Erumauli
Christine
Arugkoda
Ashfaq
Rubin
Ayyala
Mohammed
Abdul
Aziz
Beere
Stefanos
Bekiaris
Berrio
Perez
Bishal
Bhandari
Bhusal
Tarriq
Bird
Buratti
Maryam
Bacilla
Ferreira
Emerson
Cabrera
Cai
Hua
Chai
Chaudhary
Yukun
Chen
Chen
Xuefeng
Chen
Yekaterina
Charuka Senal
Bandara
Damunupola
Davies
Bishal
Dewan
Dhungana
Raj
Dighe
Ding
Manqing
Dong
Dong
Du
Rabin
Dulal
Dulal
Soan
Thi
Minh
Duong
Ebrahimighahnavieh
Ayman
Ahmed
Elgharabawy
Ferdaus
Faizul
Firoz
Francis
Kerl
Arnel
Galindo
Gao
Harshit
Garg
Gatavi
David
Gay
Ghimire
Bikesh
Shrestha
Ghinangju
Gibson
Yongshun
Gong
Goodwin
Swaroop
Gopalam
Govinden
Amal
Delpachchitra
Arachchige
Gunatilake
Gunendradasan
Yang
Guo
Haider
Md
Shahriar
Haque
Haque
Claire
Hardgrove
Hasan
Riasat
Farooq
Hassan
Hayat
David
Henry
Hesamian
Md.
Bellal
Hossain
Huang
Huaxi
Huang
Huang
Xiandao
Huang
Huerta
Monsivais
William
Ferrer
Infante
Iqbal
Tim
Jackson
James
Kamal
Jarada
Jayasuriya
Sadari
Samanmalie
Jayawardena
Jiang
Muchen
Jiang
Chris
Johnathon
Joslin
Thisandu
Dulhara
Kahingala
Kang
Nazmul
Kaonine
Keeratimahat
Farshid
Keivanian
Khan
Md
Noman
Habib
Khan
Khan
Zaid
Ahmed
Khan
Khan
Shakil
Ahamed
Khan
Khan
Safal
Khanal
<table>
<thead>
<tr>
<th>Student Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>We have 104 new student members</td>
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</tbody>
</table>

| Md. Mahmoud Jamil | Abuhilaleh | Sujan | Ale |
| Nicholas Mark | Banic | Stepan | Bashkirov |
| Thomas | Battye-Smith | Robert | Bell |
| Timothy David | Boye | Aaron | James |
| Linh | Bui | Quang | Bui |
| Kaiyi | Cao | Huaning | Chen |
| James | Chiu | Patrick | Chiu |
| Esther | Chong | Matt | Christie |
| Ping | Chu | Joshua | Jacob |
| Joachim | Copeland | Hayden | James |
| Max | Lang | Crittenden | Luke |
| Nicholas | Davies | Antoni | Dimitriadis |
| Leiping | Duan | Isaac | Dunne |
| Kirill | Duplyakin | Quintin | Edward |
| Isaac | Joshua | Falvey | Feng |
| Beau | Fleming | Michael | Fraser |
### Associate Members

We have nine new associate members. Michelle Simmons is tolerably famous for her involvement in quantum computing and was Australian of the Year recently.

<table>
<thead>
<tr>
<th>Sejoeong</th>
<th>Kim</th>
<th>Junye</th>
<th>Li</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amirmohammad</td>
<td>Pasdar</td>
<td>Suranga</td>
<td>Seneviratne</td>
</tr>
<tr>
<td>Michelle</td>
<td>Simmons</td>
<td>Kaavya</td>
<td>Sriskandaraja</td>
</tr>
<tr>
<td>Lorenzo</td>
<td>Vigentini</td>
<td>Yucheng</td>
<td>Wang</td>
</tr>
<tr>
<td>Charika Sanjeewani De Alvis Weerasiriwardhane</td>
<td></td>
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</table>
Affiliate Members

We have eight new affiliate members

<p>| | | | | | |</p>
<table>
<thead>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Susann</td>
<td>Beier</td>
<td>Khai</td>
<td>Van</td>
<td>Do</td>
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<tr>
<td>Oliver</td>
<td>James</td>
<td>Fletcher</td>
<td>Mak</td>
<td>Makielan</td>
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<tr>
<td>Ali</td>
<td>Parvini</td>
<td>Greg</td>
<td>John</td>
<td>Peters</td>
<td></td>
</tr>
<tr>
<td>Laura</td>
<td>Anne</td>
<td>Poole-Warren</td>
<td>Jian</td>
<td>Yang</td>
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</tbody>
</table>

Dr. Bruce Poon – e-mail adsphere@optusnet.com.au – extracted this data from the IEEE's SAMIEEE data-base. He has finally mastered the changed system and we should have shorter lists of name (less onerous to format) in every subsequent issue of Circuit.
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