



The Institute of Electrical and Electronics Engineers, Inc.

## VOLUME 47 Issue 2

July 2020

*Secretariat*

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IEEE NEW SOUTH WALES SECTION  
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### Editorial:

This is the seventeenth newsletter I've edited. This one is being edited with the usual newly downloaded copy of the very latest stable version of Libre Office – 6.3.6.2.

This reports our activities during the corona virus epidemic. There weren't many of them, since we exist to bring people together and this isn't a good idea in the middle of an epidemic.

The Canberra section seems to be confident that the epidemic will have gone away by the time their symposium gets under way, on the 1st December this year (and won't come back until after the 4th).

## Chair's Message

Things have changed dramatically since I last wrote to you.

I hope you have successfully survived the lock down and are gradually getting used to the new norm of 'social distancing'.

The virtual meetings do allow business and events to proceed but I believe we are all missing the networking and socialising we used have at the breaks.

Yes, COVID-19 has achieved some of my aims in allowing those members that are not Sydney residents to participate in events. Since we have mastered the techniques of using the internet to communicate with each other, I would promote its continued use after face-to-face events are resumed, so that all members would be able to participate in all our events, wherever possible. Some events do not lend themselves to remote access in real-time for a variety of reasons. Those events should be recorded for later playback, so all those interested can get up to speed.

Are you getting value out of your IEEE membership?

IEEE has many things that are available to you on line. The first place to look is

<https://spectrum.ieee.org/static/covid19-ieee-resources>

which is a comprehensive summary of the on-line items that members can access.

You will also find useful things on the societies web pages. Amongst others the Consumer Electronics (Technology) Society has a number of interesting videos

<https://www.youtube.com/user/ieeeCESocTV/videos> ,

The Power Electronics Society has some webinars <https://www.ieee-pels.org/education/pels-webinars>

To access some of the content you may have to be a member of the Society.

Some of JILS (Joint Institutions Lecture Series) presentations have been recorded and are available on youtube.com

<https://www.youtube.com/channel/UC81XfWLVAhk83p9Zk9VyOVg/videos> .

JILS presentations are organised by a committee with representatives from EA, IET and IEEE.

The JILS presentations are normally at 6pm on 2<sup>nd</sup> & 4<sup>th</sup> Thursday of the month. Typically there have been 16 per year, this being determined by the availability and the cost of the venue. Now that we are producing 'virtual' presentations, I would like to see more presentations, possibly one a week if we can find the presenters and other volunteers to make it happen. The number of 'live' presentations would probably remain the same with the additional ones being 'virtual'.

If you have a topic you would like included or would be willing to give a presentation or willing to help with this activity, please contact me.

This year there have been few face to face meetings because of the restrictions of COVID-19, but this has not stopped activity within the Section. Webex and Zoom have been used for meetings and events by various chapters and groups.

Some of the notable events that have occurred:-

Inaugural meeting of Electron Devices Chapter – A successful event with an overseas speaker using 'virtual meetings' to full advantage.

Re-establishment of Charles Sturt Student Branch – who are organising a conference CITISIA 2020 – 25 -27 November 2020 (<https://ieee-citisia.org/>)

which is especially aimed at giving students an opportunity to present papers.

Formation of WIE (Women in Engineering) group as a part of UNSW Student Branch

Formation of Joint ACT & NSW Control Systems Chapter.

Inaugural workshop for SIGHT (Special Interest Group on Humanitarian Technology) (<https://sight.ieee.org/>) in Australia. If you would like to be involved in this work, please contact Matthew Imhoff <matthew@mimhoff.com>.

After drawing your attention to the activities that are occurring, it has to be acknowledged that there are some chapters and groups that are nearly, if not entirely, dormant.

This could be for a variety of reasons, including the committee members not having the time to devote to it and/or the lack interest of the members in motivating the committee to organise events.

If you belong to such a Society or Group which is a part of the NSW Section and would like to be involved in revitalising it, please contact me, so we can initiate the process.

UNITE will not be held this year due to the constraints of COVID-19. We are planning to hold the next one in 2021.

The Section is here to support you, our members, both technically and socially. I believe we are reasonably proficient at meeting your technical needs but we could improve on the social side. For example:- do you know who else in your organisation is an IEEE member?

Should we organise some get-togethers in small groups when circumstances allow?

Your thoughts, ideas and even volunteering to organise social activities would be greatly appreciated.

Remember, you will only get a return on your investment in the IEEE when you get involved in its activities. This may mean as little as attending an event, which may now be 'virtual'. With the number of 'virtual' events now taking place, there is no reason why anybody could not be involved.

Feel free to contact me if you have any concerns, suggestions or need support.

Wishing the best of health at this troubling time and hope to 'meet' with you at one of our events.

Colin Elston  
Chair NSW Section.

# IEEE EDUCATION SOCIETY WORKSHOP

Women in Engineering Education Forum 24<sup>th</sup> April 2020

IEEE Education Society, NSW Chapter organized a workshop for women who are actively involved with, and contributing to, engineering education, on 24<sup>th</sup> April.

Women engineers who are actively involved with teaching in different universities often come up with innovative ideas to improve the quality of engineering education. On behalf of the IEEE NSW Education Society, NSW Chapter, we organized a Women in Engineering Education Forum to bring together women educators from different universities across New South Wales. They shared their experience with us.

The three speakers were **Prof. Alison Lennon (UNSW)**, **Dr Roba Abbas (UOW)** and **A/Prof. Yijiao Jiang (MQU)**. Prof. Alison Lennon gave a talk titled “Experiences in engineering research in Australia, a personal perspective”. We discussed important questions such as the difficulty of changing one’s career path from industry to academia or vice-versa.

Dr Robba Abbas shared her journey as a female academic and described her contributions to engineering education and IEEE activities. In her talk, she mentioned her passion for educating young engineers and highlighted the importance of “ethics in engineering”.

Associate Prof. Yijiao Jiang presented her “thoughts on Women in Engineering”. She emphasized the importance of a good mentor in a successful career, and talked about the way an innovative and multidisciplinary approach attracted student engagement - this did include some discussion of the value of introducing research activities into student learning programs.

This event was conducted online via Zoom due to COVID-19 restrictions then in effect. Around twenty people, including academics from UOW, UTS, UNSW and MQU, enthusiastically participated in the event (or as enthusiastically as you can via Zoom). We would like to organize a face-to-face event with engineering educators at the end of the year when the COVID-19 restrictions are eased.

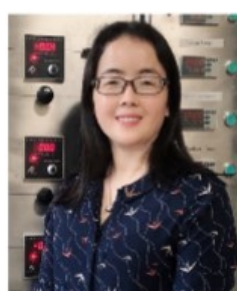
A few photographs from the online recording of the workshop are shared here:



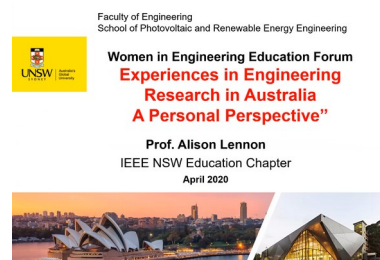
Prof. Lenon UNSW



Dr. Abbas UOW



A/Prof. Jiang MQ



*Thanks to Tharushi Natasha and Nishat Yasmin Koli for promoting this event.  
Article by Sudipta Chakraborty.*

# IEEE ROBOTICS AND AUTOMATION SOCIETY WORKSHOP

## Ladder versus Structured Text for the Arduino: a brief comparison

On 30<sup>th</sup> May, IEEE Robotics and Automation Society, NSW Chapter organised a workshop titled “Ladder vs Structured text versus Arduino programs, a brief comparison”.

Programmable Logic Controllers are relatively expensive industrial grade hardware, which - from a software perspective - are devices used to realise Finite State Machines.

Ladder and Structured Text are two common IEC 61131-3 standard programming languages that are industrially used worldwide for programmable logic controllers (PLCs). There are compilers that translate programs expressed in these languages into machine code that realises the desired finite state machine functionality.

At the school and university level, the Arduino is one of the most frequently used stand-alone microcontroller boards for academic and hobbyists applications. The Arduino project uses relatively cheap commercial hardware, which can be programmed to realise finite state machine functionality.

The Arduino project also includes open source software which includes a C-style high level programming language - Arduino - which can be compiled into machine code which can realise finite state machine functionality with Arduino hardware.

This express webinar tried to bridge the gap between Arduino enthusiasts and the PLC programming languages used industrially. In this webinar, a few common and basic industrial programs written in Ladder and Structured Text were presented in the form they would be set out to be run on an Arduino.

Dr Budhaditya Majumdar, from Robohelix, was the speaker in this workshop.

This event was conducted online via Zoom due to COVID-19 restrictions. Around fifteen participants from industry and academia joined this online workshop. It was an interactive session, and some of the participants asked for another session of this webinar. Deon Rowley, a prominent IET and EA Fellow and volunteer, congratulated the organisers and suggested that it might serve as the basis a Joint Institution Lecture.

Thanks to all the committee members of RAS, Luke Wincent Sy, Mohamed Awadallah, Matthew Imhoff and Sudipta Chakraborty, for organising and promotion of the event. A few photographs from the online recording of the workshop are shared here:

IEEE Robotics & Automation Society

IEEE NSW Section  
Robotics and Automation Society  
presents

**Ladder vs Structured Text vs ARDUINO**  
IEC 61131-3

PART - I

Date: 30th May 2020 @1400HRS  
Register at: <https://events.vtools.ieee.org/m/230381>

**Webinar!**

```

void setup()
{
  pinMode(13, OUTPUT);
  digitalWrite(13, LOW);
}

void loop()
{
  digitalWrite(13, HIGH);
  delay(1000);
  digitalWrite(13, LOW);
  delay(1000);
}

```

fb.me/nsw.ieee.ras



30/05/2020

# IEC 61131-3 vs Arduino Data types

IEC 61131-3 data types

Keyword	Description	Range
BOOL	Boolean value	0 or 1
SINT	Short integer	-128 to +127
USINT	Unsigned short integer	0 to 255
BYTE	Single byte bitmask	16#00 to 16#FF
INT	Integer	-32768 to +32767
UINT	Unsigned integer	0 to 65535
WORD	Two byte bitmask	16#0000 to 16#FFFF
DINT	Double integer	-2147483648 to +2147483647
UDINT	Unsigned double integer	0 to 4294967295
DWORD	Four byte bitmask	16#00000000 to 16#FFFFFFFF
LINT	Long integer	-9223372036854775808 to +9223372036854775807
ULINT	Unsigned long integer	0 to 18446744073709551615
LWORD	Eight byte bitmask	16#0000000000000000 to 16#FFFFFFFFFFFFFFFF
REAL	Single precision floating point	-
LREAL	Double precision floating point	-
TIME	Interval value	-
DATE	Date value	1601-01-01 to 9999-12-31
TIME_OF_DAY or TOD	Time of day	00:00:00.000 to 23:59:59.999
DATE_AND_TIME or DT	Date and time value	1601-01-01-00:00:00.000 to 9999-12-31-23:59:59.999
CHAR	Single byte character	\$00 to \$FF
WCHAR	Double byte character	\$0000 to \$FFFF
STRING	Single byte character string	-
WSTRING	Double byte character string	-

Arduino data types

## Data Types

boolean true | false  
 char -128 - 127, 'a' '\$' etc.  
 unsigned char 0 - 255  
 byte 0 - 255  
 int -32768 - 32767  
 unsigned int 0 - 65535  
 word 0 - 65535  
 long -2147483648 - 2147483647  
 unsigned long 0 - 4294967295  
 float -3.4028e+38 - 3.4028e+38  
 double currently same as float

(by Mark Lyffton)

(from Farnhill Software)

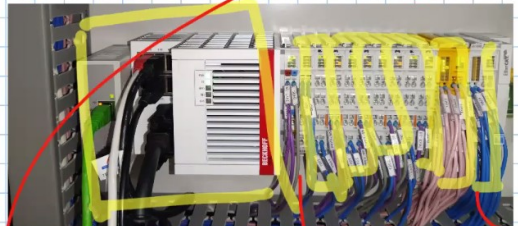


2

# PLC I/O vs Arduino I/O

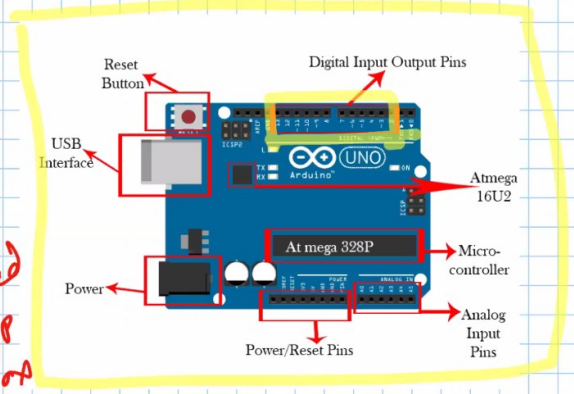
PLCs have dedicated I/O. Arduino has flexible digital I/O

\* { fixed analog i/p  
 flexible analog o/p (PWM)  
 not discussed in this session



I/O

fixed i/p box  
fixed o/p box



# Starting the IEEE SIGHT Program in Australia

On June 26, the IEEE Special Interest Group on Humanitarian Technology (IEEE SIGHT) held a workshop to plan how to implement the SIGHT program in Australia.

The event was organised by Matthew Imhoff from the SIGHT Operations Subcommittee, which supports new SIGHT groups through the application process, with an overview of the SIGHT program delivered by Steering Committee Chair Sampathkumar Veeraraghavan who joined from Boston.

The SIGHT program is an initiative of the IEEE Humanitarian Activities Committee. It consists of global network of “SIGHT groups” engaging IEEE members and volunteers as they identify and address local problems by applying their technical skills and partnering with their local communities.

Each SIGHT group focuses on one particular issue within their own community and partners with local organisations to create a lasting positive impact, while volunteers increase their professional skills and knowledge of community development. Groups are eligible to apply for grants from the IEEE foundation to fund their work. Additionally, the global SIGHT network allows members from all regions to share their best practice and stories of impact.

Friday’s SIGHT Australia kick-off and ideation workshop was attended by 30 people, who came from IEEE Sections in NSW, Victoria, ACT and Queensland, as well as academics and community development practitioners from the Humanitarian Engineering Community of Practice, a group starting within Engineers Australia.

After an introduction to the program from the global SIGHT chair, participants shared their ideas for SIGHT groups, focusing on three areas – what areas of community need exist in Australia, what the IEEE membership in Australia would be interested in contributing to, and what assets there are in the broader IEEE network that would help the projects have a positive impact. Some of the ideas are shown below – for the full list visit <https://tinyurl.com/ieee-sight-au-ideas>



Overall, the workshop was a great success, with two key outcomes that show the way forward to starting the program in Australia.

First, for those interested in starting their own SIGHT group, it is recommended to start with some background research into your chosen topic and identify community partners to engage with - this probably the most important step, one that ensures that the groups work will have a sustained positive impact.

A complete application includes an appreciation of the target community, the context of the issue the group is addressing, and a plan of activities that includes community engagement, capacity building for the group, and education and training for volunteers.

The second recommendation from the workshop was to put in some work on forming an overarching “SIGHT Australia” group to ensure a consistent and high-quality program for all stakeholders, all over Australia, including volunteers, their community partners and the communities they serve, and others. Some of the benefits of having such a group would include more effective sharing of good practice between groups (engaging others like the Humanitarian Engineering CoP too) and clear lines of communication for anyone who wanted information or support regarding the program.

Next steps:

For more information about the SIGHT program, visit <https://sight.ieee.org> or email Matthew at [mimhoff@ieee.org](mailto:mimhoff@ieee.org)

The workshop was recorded and can be found at <https://tinyurl.com/ycr9zxsx2> with slides for reference here: <https://tinyurl.com/ybgvroh2> . The link asks for a password.

The password is **aU!6CPbN4gvs**

To sign up for further updates, visit: <https://tinyurl.com/sight-au-signup> to be connected with others who share the same interest.

Thank you very much to all who attended and especially those who have already emailed offering help!

Matthew Imhoff

IEEE SIGHT Operations Subcommittee member



## **Neville Thiele Eminence Award**

The Neville Thiele Eminence Award is the most prestigious award of the ITEE College of Engineers Australia. It is presented in memory of The Institution of Radio and Electronics Engineers (IREE) and is named in honour of the late Mr. A.N. (Neville) Thiele OAM.

The IREE represented the profession of radio and electronics engineering in Australia for many years, while Neville Thiele was an outstanding Australian Electronics Engineer, former President of the IREE and a world renowned expert on audio engineering standards and the design of loudspeakers.

The award recognises eminence in information, telecommunications and electronics engineering and will honour a member who has made significant contributions to the art of practice of engineering in the disciplines covered by the ITEE College. The award also recognises the individual's significant contributions to the community.

### **Nomination Criteria**

The nominee must:

- provide details of the nominee's technical and professional career, and demonstrate the nominee's compliance with the judging criteria and their contributions to the Australian community
- provide a brief (approx 1 page) essay on how the \$10,000 cash award will facilitate their professional and personal development.

The candidate will:

- have made significant practical and/or theoretical contributions to the art and practice of engineering in any (or several) of the following disciplines:
  - Communications Engineering;
  - Computer Systems Engineering;
  - Electronics Engineering;
  - Information Engineering; or
  - Software Engineering, and
- have made significant contributions to the community.

Nominees with Chartered status will be favourably regarded.

### **Terms and Conditions**

A recipient of the award must:

- be an Australian citizen or permanent Australian resident; and
- be eligible to be a member of Engineers Australia in the grade of engineer, technologist or associate.

The nomination form must be signed by the nominee and two referees, at least one of whom must be a chartered member of Engineers Australia.

*Unsuccessful candidates may be re-nominated in subsequent years.*

[Please click here to download the award guidelines.](#)

Presentation of Award. The recipient will receive a cash prize of AU \$10,000 provided by the IREE Foundation, a framed certificate and an engraved medal. The prize will be presented at a suitable formal occasion of Engineers Australia.

## 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 2020 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](mailto: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.

## **Joint Chapter Broadcast Technology, Consumer Electronics and Product Safety Engineering**

The Consumer Electronics Society has changed its name to the Consumer Technology Society, because as it focuses on the whole product, not just the hardware to which the term 'electronics' referred.

It is hoped that this name change will increase the membership which has been declining in recent years.

The Society's focus is on all technology that one - as a consumer - could use, whether it is a piece of hardware or the code to allow a device to offer a particular feature set.

In the Broadcast space, the DAB receiver Australian Standard 4943 has been revised and will be released for public comment in the near future. Projects have been raised with Standards Australia for the creation of receiver and transmission standards for DVB-T2. Work on drafting these new standards is expected to commence shortly.

The Consumer Technology Society has a number of Distinguished Lecturers, who we may be able arrange to give a webinar presentation, if there are enough members interested - See [https://cesoc.ieee.org/images/files/pdf/PDF-file-SeparateWebpage-detailed-DL\\_List-Topics-Abstracts.pdf](https://cesoc.ieee.org/images/files/pdf/PDF-file-SeparateWebpage-detailed-DL_List-Topics-Abstracts.pdf)

Though the membership of the Joint Chapter is about 50, I believe that there would be many more interested in the activities the Chapter could arrange. If anyone is interested in becoming part of the group that arranges the events, could they please contact me.

Colin Elston (colin.elston@ieee.org) Chair

## IEEE NSW Section Volunteer Awards 2020



**IEEE**  
Advancing Technology  
for Humanity

### IEEE NSW Section Presents

# Outstanding Volunteer Awards

Recognising the contribution NSW members make to the IEEE and its vision of advancing technology for the benefit of humanity\*

- IEEE NSW Outstanding Volunteer
- IEEE NSW Outstanding Young Professional
- IEEE NSW Outstanding Women in Engineering Volunteer
- IEEE NSW Outstanding Student Volunteer

More information <http://sites.ieee.org/nsw/>      Nominations Deadline 31 August      \* Available to IEEE NSW Members Only. Join today at [www.ieee.org](http://www.ieee.org)

The IEEE NSW Section in 2018 ran the inaugural IEEE NSW Outstanding Volunteer Awards.

This year the Awards include;

- IEEE NSW Outstanding Volunteer
- IEEE NSW Outstanding Young Professional Volunteer
- IEEE NSW Outstanding Women In Engineering Volunteer
- IEEE NSW Outstanding Student Volunteer

More information as well as the Awards Policy and Nomination Form can be accessed at <http://sites.ieee.org/nsw/awards-recognition/>

**Nominations will close on 31 August 2020.**

Tony Zaglas, IEEE NSW Section Awards and Recognition Chair

## **IEEE Symposium on the Ethical, Social and Legal Implications of Artificial Intelligence (IEEE ETHAI)**

Scope and Aims:

Today, Computational Intelligence (CI) and Artificial Intelligence (AI) techniques are embodied within many technologies. For example, Fuzzy Control is a central piece within most control systems for technologies such as washing machines. Deep Neural Networks are sitting today on most smart phones offering search-by-image capabilities. Evolutionary Computation is creating a leap forward in industry and robotics when coupled with 3D printing that allows evolved robots to come to life quickly and with low cost. AI/CI researchers excel in designing and implementing these technologies to create significant positive impact on the economy and human society as a whole. It is incumbent upon us as socially-responsible AI/CI researchers to understand the ethical and social implications of the technologies we create and champion.

The objective of the proposed Symposium is to discuss the ethical and moral principles that govern the behaviour of AI/CI technology, as well as the operator, user and other stakeholders who are impacted by decisions informed by such technologies. These principles should cover the following: balancing the ecological footprint of technologies against the economic benefits; managing the impact of automation on the workforce; ensuring privacy is not adversely affected; and dealing with the legal implications of embodying AI/CI technologies in autonomous systems. As the largest technical event in the field of CI, SSCI provides an ideal forum for discussion of these issues.

### **Topics**

- Potential impact of AI/CI on the human workforce and distribution of wealth
- Potential impact of AI/CI on privacy
- Safety of AI/CI systems embedded in autonomous and automated systems (e.g. autonomous vehicles, nuclear power plant control systems)
- Human-machine Trust and Risk in AI/CI Systems
- Ethics of AI/CI systems in business, economics or manufacturing
- Specific applications of AI/CI and the potential ethical/social benefits and risks (e.g. Marking of student assignments, assessment of legal documents, automated decision making in the stock market, medical research)
- Legal implications of AI/CI (e.g. legal liabilities when things go wrong; how do you certify systems that can ‘learn’ from their environment etc)
- Need and direction for developing formal standards in ethics for AI/CI
- Public perception of AI/CI
- Impact of AI/CI on human cognition and social relatedness
- Role of AI/CI in politics and in manipulating public opinion
- Ethics and Legal implications of use of AI/CI in National Security

## Useful Links

Webpage: <http://www.ieeessci2020.org/symposiums/ethai.html>

Paper Submission: <http://www.ieeessci2020.org/submission.html>

### Important Dates:

1st of April, 2020	Tutorials, Workshops and Special Sessions proposals
1st of April, 2020	Submission Site Opening
15th of April, 2020	Registration Opening
15th of April, 2020	Accepted Workshops and Special Sessions Announced
6th of July, 2020	Accepted Tutorials Announced
<b>7th of August, 2020</b>	<b>Paper Submission Deadline (no extension)</b>
4th of September, 2020	Notification to Authors
18th of September, 2020	Camera Ready Version
18th of September, 2020	Early Registration Deadline
1st of December, 2020	Workshops and Tutorials
2-3 of December, 2020	Main Conference (Virtual)

## Symposium Chairs



### Matt Garratt

[m.garratt@adfa.edu.au](mailto:m.garratt@adfa.edu.au)      UNSW, Canberra, Australia

## Program Committee

- Chuan-Kang Ting, National Tsing Hua University, Taiwan
- Keeley Crockett, Manchester Metropolitan University, UK
- Mario Pavone, University of Catania, Italy
- Robert Reynolds, Wayne State University, USA
- Garry Greenwood, Portland State University, USA
- Sean Goltz, Edith Cowan University, Australia
- John Sheppard, Montana State University, USA
- Max Cappuccio, UNSW Australia
- Sheridan Houghten, Brock University, Canada
- Jai Galliot, UNSW, Australia
- Ambarish Natu, Australian Taxation Office, Australia

Australian Capital Territory Section : <https://site.ieee.org/act/>



## CALL FOR PAPERS

### Organizers

#### General Co-Chairs

**Mike McShane**  
Texas A&M University, USA

**Subhas Mukhopadhyay**  
Macquarie University, Australia

#### Technical Program Co-Chairs

**Kourosh Kalantar-zadeh**  
University of New South Wales (UNSW), Sydney NSW, Australia

**Gijs Krijnen**  
University of Twente, The Netherlands

### Important Dates

#### May 6, 2021

Proposals for Tutorials

#### May 6, 2021

Proposals for Focused Sessions

#### June 18, 2021

Paper Submission Deadline  
(Max 3 pages of text + 1 page of references)

#### August 9, 2021

Notification of Paper Acceptance

#### August 30, 2021

Submission of Final Papers

Visit the website for the most up to date information relating to abstract submission, tutorials, and special sessions information and deadlines.



IEEE SENSORS 2021 is intended to provide a forum for research scientists, engineers, and practitioners throughout the world to present their latest research findings, ideas, and applications in the area of sensors and sensing technology.

IEEE SENSORS 2021 will include keynote addresses and invited presentations by eminent scientists and engineers.

#### Topics for IEEE SENSORS 2021 include

- » Sensor Phenomenology, Modeling, and Evaluation
- » Sensor Materials, Processing, and Fabrication
- » Chemical and Gas Sensors
- » Microfluidics and Biosensors
- » Optical Sensors
- » Physical Sensors: Temperature, Mechanical, Magnetic, and others
- » Acoustic and Ultrasonic Sensors
- » Sensor Packaging
- » Sensor Networks and IoT
- » Sensor Applications
- » Sensor Systems: Signals, Processing, and Interfaces
- » Actuators and Sensor Power Systems
- » Sensors In Industrial Practice

#### Focused Sessions

IEEE SENSORS 2021 will have focused sessions on emerging sensor-related topics. Details related to the Call For Focused Sessions are on the conference website.

#### Publication of Papers

Presented papers will be included in the Proceedings of IEEE SENSORS 2021 and in IEEE *Xplore* pending author requirements being met. Authors may submit extended versions of their paper to the *IEEE Sensors Journal*.

#### Industry Day

A special track designed to encourage industry participation will include industry showcase/demonstrations, industry networking, and an industry panel luncheon. Special flexible one-day registration will be available to facilitate industry participation.

#### Special Issue in the *IEEE Sensors Journal*

A small number of best papers presented at the conference will be invited to contribute extended abstracts towards a special issue of the *IEEE Sensors Journal*. An invitation is not a guarantee of publication but an indication of content desirable to the journal, as well as the recognized quality of the work as submitted to and presented at the conference.

#### Exhibition Opportunities

The Conference Exhibit area will provide companies and other organizations with an opportunity to display and promote products, services, equipment, books, journals, publications, and/or other items to attendees from around the world.

For further information contact Coral Miller,  
[cmiller@conferencecatalysts.com](mailto:cmiller@conferencecatalysts.com)



Please visit: [2021.ieee-sensorsconference.org](http://2021.ieee-sensorsconference.org)

## New and upgraded Members of the NSW branch of the IEEE

For the period from the 1st March 2020 to the 30th June 2020.

The IEEE spread sheet did include the information that Simon Gilchrist had been upgraded to a Standards Association member, but didn't tell us what that meant.

### New Fellows

None.

### Life Fellows

None of them too.

### Life Senior Members

Or them either.

### Life Members

We have two new life members

Raymond	T	Garrett	Anil	Sharma
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### Senior Members

We have nineteen new Senior Members

Ian	S	Burnett	Kusal	Epá
Catherine	Patricia	Foley	Md. Rabiul	Islam
Chul		Kim	Adriana-Simona	Mihaita
Duy	Trong	Ngo	Diep Ngoc	Nguyen
Mukesh		Prasad	Yogeshwar	Ranga
Christopher		Rowe	Robeert Shuhdi	Salama
Mahendra	Gunathilaka	Samarawickrama	Weidong	Su
Philip	R	Swadling	Nazifa	Tahir
Jo	T	Tibbitts	Ping	Yu
Basit	Ali	Zeb		

### Members

We have a lot more new Members - 185 of them.

Mohammed		Abrar	Mohammad H	Aghdaei
Ashek		Ahmmed	Jeanette	Aitken
Mortada	Asaad	Al-Banna	Omar Mohammad	Alawneh
Ismail	Mohamed	Ali	Hamid	Alinejad-Rokny
Anwaar-ul-Zahoor		Amjad	Mojtaba	Amjadipour



Georgios		Angelis	Robert	N	Aroney
Behzad		Asadi	Affan	Aziz	Baba
David		Bales	Andrew		Benoit
Richard	Erhardt	Bercich	Justin		Bourke
Xin		Cao	Lijun		Chang
Nathan	Liang Peng	Chang	Yingying		Chen
Shu	Lin	Chen	Han		Chen
Wenhui		Chen	Hon	Wah	Cheng
Qingqing		Cheng	Chee	Mun	Chong
Wai	Tony	Chung	Luciano	Vito Peter	Colagiuri
Dean	A	Cooper	Angus	A	Coskerie
Mohammad		Deghat	Fernando	Javier	Diaz
Antoni		Dimitriadis	Manqing		Dong
Mahmoud		Elkhodr	Geoffrey		Ellison
Reza		Fakhr	Alan	H	Ford
Oliver		Fuller	Eleanor		Gates-Stuart
Samir		Gautam	Michael	Roy	George
Lindsay	J	Gordon	Craig		Gorman
John		Graham	Shashank	Kumar	Gupta
Noman		Haider	Ferhat		Hajdarpasic
Alex	Satoru	Hanrahan	Jonathon	Andrew	Harding
Adrian		Hobbs	Samuel	David	Houston
Eric		Howard	Yining		Hu
Dehan		Hu	Shaoli		Huang
Haojie		Huang	Murray		Hunt
William	Ferrer	Infante	Saeid		Iranmanesh
Predrag		Jaksic	Daniel		Jedrychowski
David	I	Johnson	Humayun		Kabir
Thisandu	Dulhara	Kahingala	Jichao		Kan
Manolya		Kavakli	Bruce		Keech
Shakil	Ahamed	Khan	Say	H	Khor
Farhan	Aziz	Khorsheed	Matloob		Khushi
Christopher		Klem	Kausthub		Krishnamurthy
Zdenka		Kuncic	Divesh	Noel	Lal
Ali		Lalbakhsh	Simon	Gee Ho	Lee
James	Ju Heon	Lee	Chaojie		Li
Caoyuan		Li	Liu		Liu
Ziyu		Liu	Daniel		Lloyd
Stephen	Bruce	Lucchese	Yuyue		Luo
Erika		Ly	Iain	F	Macgill
Daniel		Mackinlay	Shaun		Maddison
Nicholas	Grant	Madew	Mohamed Atef	Ali Rajab	Madni
Adnan	M	Mahmood	Imran		Makhdoom
Angel	G	Maluyo	Ben		Marks
Jean	P	Mars	Ali		Marzoughi
Ronan		McElhinney	Kim	L	Mcnally
Nur Sabrina Binti		Md Noorpi	Ali		Mehrabi
Sarhan	Khan	Missalot	Yashodhan		Moghe
Kassem		Morad	Rebecca	Erin	Morgan
Chibuzor	Joel	Mpamah	Achut	K	Myneni
Mohsen		Naderpour	Muhammad Tariq		Nazir
Minh	Quang	Nguyen	Mohammad Sohrab	Hasan	Nizami
Azadeh		Noori Hoshyar	Hamed		Nosrati

Mark	A	Nostalgia	Miguel	Ivan	Pacheco Sanchez
Yuxin		Pan	Jigesh		Parneria
Manas		Patra	Ruhano	Hayeshan	Perera
Samir		Pizovic	Aiswarya		Pradeepkumar
Yongliang		Qiao	Feng		Qiao
Naufan		Raharya	Adail		Retamal
Jonathan		Robinson	Fiacre	Emile	Rougieux
Nadi		Sadr	Deepak	S	Sahay
David	Grahame	Scarratt	David	J	Schwartz
Suranga		Seneviratne	Mohammad		Seydali Seyf Abad
Muhammad	Basit	Shahab	Samira		Shaikh
Mao		Shan	Pankaj	Kumar	Sharma
Sumeet		Singh	Khushboo		Singh
Peter		Skarpetis	Matthew		Sladescu
Stephanie	L	Smith	Ning		Song
Gajan		Suthokumar	Ting	Rei	Tan
Andrew	M	Terry	Ronak	Himanshubhai	Thaker
Sylvie		Thieboux	Shakila	M	Tonni
Aaron		Tootell	Sanket		Totewar
Viet	Thang	Tran	Helene		Tran
Nhan	Duy	Truong	Lisa		Twigg
Nagarajan		Valanoor	Xu		Wang
Chaoyue		Wang	Shangbo		Wang
Tianming		Wang	Kai		Wang
Zhongqin		Wang	Xuyang		Wang
Ryan		Williams	Joseph	F	Winter
Chi	Yan	Wong	Xiaowei		Wu
Weihong		Wu	Jiatian		Xu
Xinzhi		Yan	Emily	Wern Jien	Yap
Md	Tanvir	Yeasin	Baosheng		Yu
Weijie		Yuan	Liang		Yuan
Tieling		Zhang	Qian		Zhang
Diwei		Zhang	Fangfei		Zhang
Lihong		Zheng	Yujie		Zhou
Bin		Zhu			

Mahmoud Elkhodr is active on the executive committee - he looks after nominations for people to do the work, which would be less of a chore if they were easier to find. Khushboo Singh is chair of the Macqarie University student branch.

### Associate Members

We have three new associate members.

Zhe	Chen	Hannah	Lee
Steven	Regidor-Yanez		

### Affiliate Members

We have two new affiliate members

Shameek	Ghosh	Md. Moktadir	Rahman
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## Graduate Student Members

We have 244 new or upgraded graduate student members.

Behrokh		Abbasnjad	Ezwan	Shah	Abd Majid
Mojtaba		Abdollahzadeh	Sajad		Abolpour Moshizi
Farhana		Afroz	Bilal		Ahmad
Hadi		Ahmadi	Ahmed	Abdulelah	Ahmed
Fowzia		Akhter	Nahida		Akter
Md	Morshed	Alam	Muhammad	Mubashir	Alam
Ahoud		Alhazmi	Mohsin		Ali
Hamzeh		Aljarajreh	Reem	Mounzer	Almasri
Ahlam		Alnefaie	Ali		Alshehri
Belal	Saeed	Alsinglawi	Mir	Nahidul	Ambia
Nadil		Amin	Saeed		Amirgholipour
Nadia		Anam	Maral		Ansari
Samrah		Arif	Janindu		Arukgodra
Bhulok		Aryal	Thazin	Win Win	Aung
Fang		Bai	Sunetra		Banerjee
Bikash		Bashyal	Gopal		Bogati
Le		Cai	Yutong		Cao
Yu		Cao	Rodrigo		Castro
Hua		Chai	Chen		Chen
Xiaoshuang		Chen	Fang		Chen
Lisheng		Chen	Oliver		Chi
Nam	Hoai	Chu	Prabhakar		Dahal
Benny		Dai	Namrata		Dalal
Arijit		Das	Chenwei		Ding
Liang		Ding	Milos		Dubajic
Peter		Dupen	Emelie	Martina	Ekenstedt
Xiaochen		Fan	Sara		Farahmandian
Madiha		Farasat	Qianyu		Feng
Shaopeng		Fu	Xiaohang		Fu
Zeyu		Ge	Yongshun		Gong
Vivasha		Govinden	Artur		Grigorev
Zhanzhong		Gu	Hao		Guan
Senhui		Guo	Jiaxian		Guo
Song		Guo	Kairui		Guo
Sudeep		Gyawali	Rim		Haidar
Gad		Hakim	S		Hall
S		Hall	Nicole	Lisa	Hallett
Muhammad		Hanif	Faiazul		Haque
Rasedul		Hasan	Haoyu		He
Yang		He	Linh	Manh	Hoang
K M	Anamul	Hossain	Md.	Bellal	Hossain
Bing		Huang	Sajid		Hussain
Aya		Hussein	Md	Rafiqul	Islam
Md	Faruque	Islam	Sadari	Samanmalie	Jayawardena
Ratiranjan		Jena	Lu		Jiang
Alka	Rachel	John	Benjamin		Johnston
Yosua		Julianto	Marcel		Julliard
Pawan		Karki	Ayush		Karki
Kanyawee		Keeratimahat	Komal	Saifullah	Khan

Muhammad	Talal Ali	Khan	Habes	Ali Ahmad	Khawaldeh
Erfan		Khordad	Thanh	Tung	Khuat
Binh	Thanh	Kieu	Richard		King
Samadhi	Kaushalya	Korale Liyanage	Amit		Kumar
Abdallah		Lakhdari	Archie		Latayon
Thang	Minh	Le	Ki	Myung Brian	Lee
Huan		Li	Jizhizi		Li
yifen		Li	Jing		Li
Peike		Li	Yiyang		Li
Kunming		Li	Shuming		Liang
Jiayin		Lin	Tianyu		Liu
Yuhong		Liu	Mengdi		Liu
Tongming		Liu	Ji		Liu
Sihan		Ma	Wilasinee		Malee
Samira		Mamun	Arpit		Mathur
Mahendra	Singh	Meena	Mingyuan		Meng
Farhan		Mohammed	Imran		Mohammed
Ghulam		Mohy-ud-din	Faisal		Nadeem
Usman		Naseem	Riwaj		Neupane
Nhung T	H	Nguyen	Duy	Huynh Anh	Nguyen
Lanh	Van	Nguyen	Tan	Ngoc	Nguyen
Tom		Ou	Adewale	Moses	Oyeku
Bhagya	Vijaykumar	Parmar	Arman		Pashamokhtari
Andre		Pearce	Sammy		Pfeiffer
Huy	Cong	Phi	Benjamin		Phua
Asim		Pokhrel	Satish		Pokhrel
Abhijith		Prakash	Rizka	Widyarini	Purwanto
Jiwen		Qi	Zihang		Qiu
Kamalesh		Radhakrishnan	Md	Habibur	Rahaman
Obaidur		Rahaman	A M	Mahfuz Ur	Rahman
Abdur		Rahman	Amin		Rajabi
Vivek Ananda Sunil		Ramakrishna	Parisa		Ramezani
Sinthusha		Rasanayagam	Farhan	Ahnaf	Rashid
Nischal		Regmi	Philipp		Rouast
Animesh		Sahoo	Abdullah		Sakib
Parimal	Chandrakant	Salunkhe	Pejush	Chandra	Sarker
Muhammad	Hasnan	Sazzad	Ramanan		Selvaratnam
Sumudu	Sangeethika	Senanayake	S M	Showybul	Shakib
Pratul		Sharma	Saurabh		Sharma
Nitesh		Sharma	Ziheng		Sheng
Qiaolin		Shi	Nabin		Shrestha
Aman		Shrestha	Harshith		Shrestha
Arjun	Prasad	Silwal	Prabhjot		Singh
Rajbir		Singh	Sonit		Singh
Shaher	Suleman	Slehat	Rachange		Stanton
Pingyang		Sun	Binod		Syangtan
Rui		Tang	Joshua	Anthony	Then
Yanqiu		Tian	Dai		Tran
Khuong	Hoang	Tran	S M Muslem	Muslem	Uddin
Ziqing		Wang	Guoqing		Wang
Jue		Wang	Shaoshen		Wang
Li		Wang	Shuyu		Wang
Xuesong		Wang	Qigejian		Wang

Bowen	Wang	Qian	Wang
John	Welsh	Cheng	Wen
Lilei	Wu	Qiyuan	Wu
Chunqiu	Xia	Tong	Xiao
Boyi	Xiao	Jiahao	Xu
Yufei	Xu	Yunqiu	Xu
Hanyu	Xue	Yixing	Yang
Xunxiang	Yao	Kai	Yi
Zhengyu	Yu	Kareshna	Zamani
Sen	Zhang	Qiming	Zhang
Youjian	Zhang	Lianbo	Zhang
Xikun	Zhang	Lu	Zhang
Ying	Zhang	Ling	Zhang
Xuan	Zhang	Chengkun	Zhang
Runfan	Zhang	Shaojun	Zhang
Jiahong	Zhao	Shanshan	Zhao
Qiwei	Zhao	Jiaheng	Zhao
Qi	Zhen	Shijia	Zhou
Bingxin	Zhou	Dongzhan	Zhou
Xinqi	Zhu	Weina	Zhu

## Student Members

We have 56 new student members

Hazeem		Adly Ariff	Fariha	Afsana
Bikram	Bahadur	Basnet	Lachlan	Brown
Patrick		Budhathoki	Bingchen	Cai
David		Castellano	Nathan	Chee
Xinyi		Chen	Shirlei	Dos Santos
Zehao		Duan	Jesse	Dunn
Danny	Javier	Falero	Chang	Feng
Santosh	Raj	Giri	Kripa	Gosai
Saurav		Gupta	Claire	Hardgrove
Kye		Hooper	Ahmed	Ismail
Kameel		Jawad Moosa	Stephen	Jones
Dylan	Luca	Kasah	Thomas	Keeyes
Jordan	Jonathan	Koster	Tung	Le
Yang		Lin	Yao	Lu
Daniel		Lynch	Benteng	Ma
Callum		Macdermid	Corey	Mantuano
Jaemmalyn		Marcelo	Caitlyn	McInally
Sakura	Jayasundera	Mukhopadhyay	Patrick	Nasr
Sheik Md	Kazi	Nazrul Islam	Kioni	Ndirangu
Garrick		Pahl	Klyde	Penan
Nicholas	Henry	Pike	Xiangyu	Qu
Purshotam		Rajthala	Diyari	Sabah
Saneil		Salunke	Victor	Siu
Rohan		Smith	Zhenyu	Sun
Wensi		Tang	Son	Tran
Sean	Cameron	Turkington	Xiaojing	Xie
Victoria	Shengli	Xu	Han	Xu
Ruixing		Yang	Patrick	Jonathan

Submitted by Dr. Bruce Poon – e-mail [adsphere@optusnet.com.au](mailto:adsphere@optusnet.com.au)



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