

# Region 10 Section Report Format

(Please replace above heading with your Section name)

*Please use the following format to submit your Section’s annual report to Region 10. Please note that the annual reports are used for selecting the outstanding Sections in the region and reports submitted after the announced due date will not be considered for the award. Please do not include more than 3 photographs and preferably put them on additional pages attached to the report (please delete this paragraph in your report).*

## PART A - SECTION SUMMARY

### A.1 Executive Summary – (Please follow the format given below)

- Section Executive Committee Member List

Chair	Fouad Karouta
Vice Chair	Ross Summerfield
Secretary	Ambarish Natu
Treasurer	Ashley Chonka
Webmaster	Jeta Vedi
Newsletter	Jeta Vedi
Educational/Student Activities	Xiuping Jia
Membership Development	Jihui Zhang
Professional Activities	Sharon Lim
<b>Societies Chapter Chairs</b>	
Antennas and Propagation	David Powell
Computer Society	Yanchang Zhao
Joint Photonics & EDS	Mohsen Rahmani/Hoe Tan
Signal Processing & Communications	Prasanga Samarasinghe
GRSS	Xiuping Jia (Q3-2020)
Nanotechnology Council	Ziyuan Li
Computational Intelligence	Saber Elsayed
Systems, Man and Cybernetics (SMC)	Fangbao Tian
Control Systems (CS)	Daoyi Dong
Young Professionals	Lei Xu/Chathurika Mediwaththe
WIE Affinity Group	Kathryn Kasmarik
TISP Coordinator	Russel Gentle
ANU Student Councillor	Nan Yang
ADFA Students Councillor	Li Qiao
<b>Student Branches Representatives</b>	
Australian National University	Khosro Zangeneh Kamali
Australian Defence Force Academy	Khalil As’ham
Student Chapter GRSS	Junpeng Zhang

- **Section Highlights**  
In 2019 the ACT Section ExCom held four meetings (20 Feb, 15 Apr, 23 July and 24 Sep) along with the annual general meeting held on 26<sup>st</sup> of November. Only the first meeting and the AGM were in-person meetings while the three others were held online (Webex/Google Meet).
- The Section used to have a booth at the yearly Canberra Mathematical Association Conference but that was cancelled in 2020 due to the Pandemic.
- **Major Events (International, National)**  
ACT Section Chair attended the virtual R10 meeting held on Saturday 7 March 2020.
- **Major Chapter Activities**
- All ACT Chapters have organised a minimum of two technical activities except APS Chapter (1x activity).
- **Major Student and Affinity Group Activities**  
The YP and WIE groups did organize the required minimum of two activities.
- **Awards**  
The ACT Section won the R10 award of “Best Small Section” for 2019.
- **TISP**  
Section Chair participated in a jury panel evaluating Science Projects of Scholars from Telopea Park High School.

## **A.2 Financial Report – (Please follow the format given below)**

- **Summary (as per submitted on NetSuite)**  
Cheque Account: AUD 16,447.74  
Term Deposit: AUD 10,836.59  
Total: AUD 27,284.33
- **Any other financial activities**  
N/A

## **PART B - ORGANIZATIONAL ACTIVITIES**

### **B.1 Membership Development Activities**

- **Total number of active members in the past 3 years.**  
The total IEEE members in the ACT Section was:  
December 2020: 465  
Nov 2019: 488 members  
Dec 2018:  
Dec 2017: 483 members and 14 affiliates  
The total IEEE members has been steady in the last decade fluctuating around 500. However, we had a big drop in early 2020 with the Pandemic following the same trend as IEEE worldwide. Membership started a slow recovery from Q2-2020. We hope our membership will return to normal (around 500) in the course of 2021.
- **Summary and evidence of work done to improve the value of membership, which leads to retention and growth of members**  
In all activities organised by the Section IEEE membership, benefits are exposed and especially student membership are promoted.

### **B.2 Chapter Activities**

- **Total number of Chapters in the Section**  
9
- **Number of Chapters formed in the current year**  
1 (Control Systems)
- **Number of active Chapters (Chapters who have reported required number of meetings during the year)**  
8, APS Chapter held only one activity
- **Summary of Chapter activities (Chapter wise with attachment table/information)**

**1. Antennas and Propagation Microwave Theories Chapter AP03/MTT17**

Chair: David Powell. One technical activity (online seminar) was organised on 16 September.

**2. Computer Society Chapter C16**

Yanchang Zhao. Two technical activities were organised, on 3<sup>rd</sup> of February and 28 July.

**3. Photonics and EDS Chapter ED15/PHO36**

Chair: Mohsen Rahmani. Three technical activities (seminars) were organized jointly with NTC, on 18 and 25 February.

**4. Nanotechnology Council Chapter NANO42**

Chair: Ziyuan Li. Two activities were held on 18 and 25 February and a 3-days virtual workshop 4-6 November having a theme “Women in STEM Early Career Paper & Grant Writing Workshop” (ECWR2020)” and attended by 51 persons mainly young women in engineering fields.

**5. Signal Processing & Communications Chapter SP01/COM19:**

Chair: Prasanga Samarasinghe. organised on.

**6. Geoscience and Remote Sensing joint ACT and NSW Chapter**

Chair Q3-2020 (due to position vacancy) Xiuping Jia. Three activities (seminars) were organized on 11 September, 16 November and 14 December.

**7. Computational Intelligence Society CIS11**

Chair: Saber Elsayed. Eight technical activities (seminars) were organised on 25 August, 4-12, 6-12 (2x), and 7 December (4x) 2020.

**8. Systems, Man and Cybernetics Society C16**

Chair: Fangbao Tian. Eleven technical activities were organised: 7 and 11 August, 4 and 11 September, 23 October, 6, 13, 20 and 27 November, 11 and 18 December.

**9. Control Systems Society**

Chair: Daoyi Dong. Two technical activities were organized on 7 October and 4 November.

### B.3 Professional and Continuing Education Activities

Summary of continuing Educational activities including conferences, technical activities, training courses, and distinguished lecture programs with attachment table / information

Event Title	Event Date	Event Category
IEEE ACT Section 2020 Meeting 1	20/02/2020 19:00	Administrative
IEEE ACT Section 2020 Meeting 2	15/04/2020 17:00	Administrative
IEEE ACT Section 2020 Meeting 3	23/07/2020 17:00	Administrative
IEEE ACT Section 2020 Meeting 4	24/09/2020 17:00	Administrative
IEEE ACT Section 2019 AGM Meeting	26/11/2020 17:00	Administrative
Phot/NTC: Nanoscale (in)-coherent optical excitations in the electron microscope	18/02/2020 10:00	Technical
Phot/NTC: MIR Glass Photonics, Semiconductor Nanoparticles ... and A Teeny Bit of Plasmonics	25/02/2020 10:00	Technical
CS: Using machine learning to derive insights from connected data	2/03/2020 17:00	Technical
YP: Introductory to Automotive LiDAR	6/03/2020 11:00	Technical

WIE: Keeping Yourself Well	5/06/2020 10:30	Professional
WIE: Engineering Career highlights and experiences	16/07/2020 13:30	Professional
CS: Missing Data Imputation Using Supervised Machine Learning	28/07/2020 18:00	Technical
SMC: A hybrid immersed boundary-lattice Boltzmann and finite difference method and its applications	7/08/2020 11:00	Technical
SMC: Flow-induced vibration of a sphere	11/08/2020 13:30	Technical
SMC: The aerodynamic functions of avian tail in gliding flight	4/09/2020 11:00	Technical
SMC: Application of discrete Boltzmann method to fluid flows with or without chemical reactions	11/09/2020 11:00	Technical
GRSS: The story of UNSW EC0: Australia's First CubeSat Trio in Orbit	11/09/2020 12:30	Technical
APS: Analog Photonic Systems: Features and Techniques to optimize performances	16/09/2020 12:00	Technical
Section: Australia's Future in Space	18/09/2020 12:30	Technical
YP: Solar, Batteries and Virtual Power Plants: Australia's Distributed Energy Future	7/10/2020 11:00	Technical
CSS: Learning control for quantum ensembles	7/10/2020 12:00	Technical
SMC: Effects of the Non-Newtonian Rheology on the Fluid-Structure Interactions in Biological Flows	23/10/2020 13:30	Technical
TISP: Section Chair participated in a jury panel evaluating Science Projects of 6 teams of 3 scholars from Telopea Park High School.	29/10/2020 15:30	Technical
NTC: Early Career Women in STEMM Paper & Grant Writing Workshop (ECWW2020)	4- 6/11/2020	Professional
CSS: Modeling and Management of Complex Engineering Systems	4/11/2020 12:00	Technical
SMC: Numerical and Experimental Research on the Aerodynamics of High-Speed Train	6/11/2020 13:30	Technical
SMC: Performance of passively pitching flapping wings in the presence of uniform vertical gusts	13/11/2020 14:00	Technical
GRSS: Modelling spatio-temporal flood inundation dynamics using remotely sensed imagery with hydrological data	16/11/2020 1:30	Technical
SMC: Degradation Modelling: from Product to System	20/11/2020 14:05	Technical
SMC: Data integration challenges in personalized cancer therapy	27/11/2020 14:05	Technical
Section: Hike to Mount Ainslie	9/12/2020 17:00	Social
SMC: Multiphase Fluid-Solid Coupled Analysis on Shock-Induced Bubble Collapse and Material Modification	11/12/2020 14:10	Technical
GRSS: Space-based GNSS Reflectometry Altimetry and Target Detection	14/12/2020 2:00	Technical
SMC: CFD Simulations of the Mucociliary Clearance in the Nasal Cavity	18/12/2020 2:00	Technical

## B.4 Students Activities

- Total number of Student Branches in the Section  
ACT has two student branches: one at ANU and one at UNSW-Canberra (ADFA). Both branches are active with drives for new student members being organized. We also have active students at University of Canberra but without an official student branch.

- Number of Student Branches formed in the current year  
N/A
- Section level student activities (student congress, paper and other contests, awards etc)  
ANU SB conducted two activities: a research photo contest (October-November 2020) and a hiking tour to the Black Mountain through the Australian National Botanic Gardens on 21 November 2020.
- Number of active Student Branches (Student Branches who have reported required number of meetings during the year)  
One
- Summary of Student Branch activities (Student Branch wise with attachment table/information)  
See same excel file as above.

## B.5 Affinity Group Activities

- Young Professional (YP)  
Chair: Lei Xu till August and Chathurika Mediawathe. Two activities were organized: 6 March: a seminar by the CTO of a startup company and on 7 October a technical seminar.
- Women In Engineering (WIE)  
Chair: Kathryn Kasmarik. Two activities were organized on 5 June and 16 July.
- Life Member (LM)  
None

## B.6 Awards & Recognition Activities

- Award constituted by the Section  
The best active volunteer 2019 was attributed to Dr. Daoyi Dong for his extraordinary contribution to the SMC Chapter with 14 technical seminars organized in 2019.
- Please list all Awards and Recognitions received by the Section, and members in the Section, from R 10 and IEEE HQ during the year  
The ACT Section did receive the R10 award for best Small Section.

## B.7 Communication Activities (Newsletter, Home Page, E-mail etc.)

- Newsletter (name and number of issues in the year)  
None
- Home Page of the Section (give the URL and how often it is updated)  
<https://site.ieee.org/act/> In 2020 the webmaster was updating regularly the website, posting regularly events and seminar announcements.
- Other means of contacts with Section members including social media  
IEEE e-notices, emails and website. We intend to reactivate the FB account of the Section in 2021.

## B.8 Industry Relations

- Membership growth and retention  
As IEEE worldwide the ACT Section membership has suffered this year from the Pandemic and membership dropped to a low of 396 (Q1 2020) and a slow recovery started in Q2 and we are now at 466 which is <10% of our usual number ( $\pm 500$ ).
- Activities for/with industrial members  
None

## B.9 Humanitarian Technology Activities

- Humanitarian Technology related activities supported by the Section including collaboration with other OUs.  
End of last year and early this year Australia knew unprecedented and recurrent bushfires ravaging a massive area in New South Wales, Victoria and Australian Capital Territory resulting in a number of casualties, massive land destruction including wildlife. The ACT did send an eNotice encouraging

members to donate for bushfires relief and our Section did make a donation of \$500 to the Rural Fire Services (effectuated in January 15, 2020).

- SIGHT Activities

## **B.10 Community Activities**

- IEEE Social activities (Family day, IEEE day, Engineers Week)”  
With the 2020 Pandemic we had 3x ExCom online meetings, however with the ease of restrictions in Australia and more specifically in ACT the Section decided to hold its AGM as in-person meeting on 26 November 2020. Forty members participated (some with partners and children (15 guests) attending the event held in a recreational open area space (The Black Mountain Peninsula) and enjoyed a catered Indian dinner and drinks while respecting the social distancing rules.

## **PART C - OTHERS**

### **C.1 Special Events**

- Please briefly describe the importance of special events and the outcomes achieved  
Similarly to 2019 Dr. Ziyuan Li (former NTC Chair and now Phot/EDS Chair) co-organized and ran a 3-days workshop on “Women in STEM Early Career Grant & Paper Writing Retreat (ECWR2020)”. Due to the Pandemic the workshop was held as an online event and attended by 51 persons mainly young women in engineering fields from Canberra and Sydney with speakers from Canberra and Sydney.
- Funding secured from the IEEE and external sources including sponsorships  
The NTC workshop received a subsidy from NTC HQ of USD800 along other local sponsoring with the technical support of the Section.

### **C.2 Relationship with National and International Societies and Non-Government Organizations (NGO)**

- Nature of relationship and details of any formal agreement signed
- Details of joint activities
- Benefit to IEEE members (for example discounts, access to technical information etc.)  
ExCom meetings, seminars and most Section activities are organized using free venues at the Australian National University, UNSW-Canberra, CSIRO locals in Black Mountain, etc.
- Benefit to Section (for example help in membership development, venue facilities, cost saving etc.)

### **C.3. Collaboration with other IEEE Sections**

- Support extended to neighboring Sections  
Technical activities like visits of Distinguished Lecturers are coordinated through the Australia Council to expand the benefits of these high-profile lecturers to the benefits of larger number of our members.
- Joint activities with any other Section  
We have two joint Chapters with New South Wales Section: GRSS and CSS.

### **C.4 Support extended to Sub-sections & Society Chapters within the Section**

- Support extended for organising technical, educational and professional activities  
The Section usually contributes to local costs of speakers at seminars and other events of various Chapters and Affinity Groups, however most activities were held online this year due to the Pandemic.
- Joint activities for membership development

The section works with the student branches to assist with membership drives.

- Support extended for the formation of a Sub-section or transition of a Sub-section into a full Section  
N/A

**C.5 Best Practices of your Section (which you would like to share with other Sections for the benefits of members)**

N/A

**C.6 Problems anticipated and suggestions for solutions, if any**

**PART D - GOALS AND PLANS**

**D.1 Continuation of project/activity in progress and their implementation plans**

The Section will continue to pay attention to the recruitment and retention of IEEE members especially student members close to graduation. The is happy to receive any hints in this matter.

**D.2 Goals and Future Plans**

The ACT Section is a modest Section situated in a territory counting less than half million population and therefore the Section is quite happy with the total number of members.

**D.3 Any innovative ideas to make IEEE more creative and value added for sustaining the membership retention and recruitment goals.**

The ACT Section follows the outline and instructions the Membership Development Team from their meetings and considers what might work and what will engage our membership.

We still maintain the loyalty program and preparing the existing members who qualify to apply for membership elevation (member to senior member) as well elevation within the IEEE societies (Fellows).

**D.4. Business Plan for Sustainable Growth and Financial Stability.**

The ACT Section has maintained financial stability over at least the past 5 or more years, with a maintained reserve, set aside to aid a major conference.