

New Zealand Central Section

PART A - SECTION SUMMARY

A.1 Executive Summary

The Section Executive Committee Member List for 2014 was:

Mansoor Shafi (chair),
 Richard Harris (vice-chair, webmaster),
 Donald Bailey (secretary),
 Ramesh Rayudu (treasurer, PES Society),
 Aaron Reid (Membership development),
 Bing Xue (WIE),
 Gourab Sen Gupta (Awards chair),
 Murray Milner (Industry coordinator),
 Duncan Hall (Industry coordinator),
 Terence Betlehem (Comm/SP/IT Society, Webmaster),
 Ian Woodhead (I&M Society),
 Mengjie Zhang (CI Society)
 Debraj Basu (Massey students),
 Henry Williams (Victoria students),
 Andrew Dawson,
 Pawel Dmochowski

Highlights of our achievements and activities during the year include:

- Section Highlights included a Joint Institutions Breakfast, a Celebrating Industry Day with a panel from industry and a Postgraduate Presentation Day.
- Major Events including being Technical sponsor of The 6th International Conference on Automation, Robotics and Applications (ICARA 2015).
- As major Chapter Activities, a number of distinguished lecturers, and other international visitors were held. The Instrumentation and Measurement Society organized a 2-3 two day workshop.
- Major Student and Affinity Group Activities included a poster competition at the Postgraduate presentation day. Massey students also organized two MATLAB workshops for fellow students.

A.2 Financial Report

The closing cashbook balance of the Section (as at 31 October) was \$15,834.81, an increase of \$3063 from last year. The Section received a \$4,933.56 Rebate from IEEE HQ. Payments of sum \$1920 went out to fund seminars and events and the Student Membership Subsidy for nine students.

We have had considerable difficulties with the bank in terms of changing signatories. One aspect of this, however, worked in our favour when banking the IEEE rebate, because the exchange rate movement during the delay worked significantly in our favour. There was still about \$1500-\$2000 of expenses outstanding for the year at the time of the AGM, because of these delays in getting the banking sorted out. The main savings was Donald Bailey attending the Sections Congress on behalf of the Central Section, which was of no cost to the Section.

PART B - ORGANIZATIONAL ACTIVITIES

During the year we were fortunate to have visits of various distinguished lecturers, and other technical sessions, listed below.

The Section Chair, Mansoor Shaafi, attended the R 10 meeting on 1-2 March 2014 in Kuching, Malaysia, representing the NZ Central Section. This was an opportunity to meet other chairs and leaders of R 10. There was some discussion on the legal status of the section and this issues is still not yet resolved.

Our Section Secretary, Donald Bailey, attended Sections Congress in Amsterdam on 20-21 August on behalf of the NZ Central Section. Key meetings were the R10 meeting, the Australian Council meeting, and the NZ Council meeting. The primary discussion in the NZ Council meeting was on the legal status and liability risks associated with the sections. Plans were discussed, on how this should be resolved within NZ, with forming an incorporated society within NZ as being the most likely way forward.

In addition to what is described below, we have regularly met once per month via Skype usually on the second Tuesday.

B.1 Membership Development Activities

IEEE membership throughout the section has been steady. Active membership was 291 for 2014 include 100 Young Professionals, 35 Graduate student members, 5 Undergraduate student members. In past years, we have had 295 members in 2012, and 294 members in 2013.

Prompt payment of membership fees was still an issue this year, with 44 members in arrears at the time of the AGM. Letters to members in arrears, to remind them to pay and about the benefits of being a member.

The IEEE New Zealand Central Section sponsored several worthwhile activities in 2014, including:

- The joint IEEE/IET/IPENZ Breakfast Event 2014 with speaker Ian McCrae, Founder and CEO of Orion Health.
- On-going success of our Postgraduate Student presentation competition.
- A section and chapter seminar series that had an extensive program with many visiting speakers from overseas and local areas.

B.2 Chapter Activities

The Section includes four Chapters, all of which are active. Two new chapters were formed in 2014:

- The joint Communications, Signal Processing and Information Theory chapter was restructured, with the Communications chapter splitting off and joining the NZ wide Communications chapter. The Signal Processing / Information Theory chapter was also extended NZ wide.
- A Computational Intelligence chapter was formed, with Mengji Zhang as inaugural chair.

The Section played host to many Distinguished Lecture visits and special speakers. In the Computational Intelligence Society Chapter:

- Prof Yaochu Jin from University of Surrey UK talked on the topic “Surrogate-Assisted Evolutionary Optimisation of Expensive Problems” on 10 February.
- David Balduzzi from Victoria University of Wellington, 12 September

The Instrumentation and Measurement Society organized:

- a visit by Asaf Grosz of Ben-Gurion University Israel on 12 February.
- LIDAR in an Automotive Environment

Between the Communications Society Chapter and the Signal Processing and Information Theory Chapter, the following Distinguished Lecture seminars were presented:

- Prof. John Matthews from University of Utah provided two seminars on 13th and 14th October
- Prof. Jaafar Elmighani from University of Leeds UK on 11 November
- Prof. Ekram Hossain from University of Manitoba on 11 November

B.3 Professional and Continuing Education Activities

Summary of continuing Educational activities including conferences, technical activities, training courses, and distinguished lecture programs:

IEEE Sensor Applications Symposium, Queenstown, 18-20 February 2014. This is the first time the symposium has been held outside the USA or Europe. Gourab Sen Gupta was the NZ-based co-chair, and there were 87 registrations, a substantial increase on 2013. There were two keynote presentations, four special sessions and a parallel Android software development workshop. See <http://sensorapps.org/>

The **Smart sensors Measurements and Instrumentation for: Agricultural and Environmental Monitoring** workshop hosted by Lincoln Agritech Ltd on 4 July was organized by the Instrumentation and Measurement Society. The full day workshop attracted 48 participants from government and commercial research institutes and from industry, and there were 22 technical presentations. Most of the presentations were made available to download from <http://www.lincolnagritech.co.nz/events/ieee-i-and-m-workshop/>

Instrumentation and Measurement Society Workshop, University of Auckland, 24-25 November. This event was well-supported by approximately 90 attendees from universities, industry and research institutes from around New Zealand. 35 of the attendees were students. A total of 46 abstracts were submitted, with 26 presented as seminars and the other 20 presented as posters. In addition, there were five keynote addresses from leaders in industry and academia. The full workshop program can be found at <http://imsnz2014.org.nz>. Industry, academia and the IEEE Instrumentation and Measurement Society generously sponsored the event. Eleven companies exhibited their products and services at the accompanying trade show, which was interspersed with the poster display area. A highlight of the workshop was the banquet dinner, which was held on the beautiful Auckland waterfront. Associate Professor Mark Sagar presented his amazing ground-breaking interactive facial animation technology in a keynote address. Everyone spent a very enjoyable evening socializing and catching up with colleagues and friends.

The **NZ Central Section Annual General Meeting** took place on 27th November 2014 at the Intercontinental Hotel in Wellington. This event included several guest speakers including:

- Dr Mansoor Shafi on "What is 5G?" 5G aims to deliver extremely large data rates and will dramatically improve end user experience. This talk describes the requirements of 5G (even though there is no agreed standardised story), and what technological breakthroughs are required to meet the 5G requirements.
- Professor Mengjie Zhang on Evolutionary Computation and Vision Applications. Professor Mengjie Zhang will give a brief presentation on the impact of Evolutionary Computation upon various vision applications.
- Dr Murray Milner on Advanced Healthcare Provision through Innovative ICT Solutions.

B.4 Students Activities

The Section consists of two active student branches, the Massey University Student Branch and the Victoria University Student Branch.

A **Postgraduate Presentation Day** was hosted on 18 September 2014 at Victoria University of Wellington. There were a total of about 30 people registered for the event. 26 presentations were scheduled with about eight of the students from Massey University and eighteen from Victoria University - Massey students travelled from Palmerston North on a minibus in order to attend the event. We had 3 judges on the panel: Donald Bailey, Ramesh Rayudu and Bing Xue. Donald acted as timekeeper and Richard Harris acted as MC and photographer. The event was held at Victoria University in the AM 101 seminar room on the Kelburn Campus. Proceedings began at around 9:00am and concluded at about 3:30pm with a pizza lunch and a prize giving ceremony. Our thanks go to Henry Williams from the Victoria University IEEE Student Branch for his fine effort in staging this event. Each presenter was given 7 minutes to present their research work and they were allocated about 3 minutes for Q & A. Judging was based on the quality of the presentation and the presenter's ability to answer questions relating to their work in a confident and appropriate manner – as if they were at an international standard conference. All presenters were awarded a signed certificate on behalf of the Central Section in order to recognise their contribution to the success of the event.

The winner was Rachel Hunt from Victoria University who presented a talk on "Evolving Less-Myopic Scheduling Rules with GP" and the two runners-up were Harsh Tataria (Victoria University) with "On the

Performance of Coordinated Multi-tier Heterogenous Cellular Networks" and Nirosha Priyadarshani (Massey University) with "Automatic Birdsong Recognition". Muhammad Yousuf Tufail received an honourable mention for his presentation on "Image Registration".

Massey students organized **two MATLAB workshops** for fellow engineering students, which was well attended.

B.5 Affinity Group Activities

A Women In Engineering group (WIE) was founded in NZ Central Section in 2014. Activities this year:

- Our WIE coordinator attended discussions in Women in Engineering Sections in international conferences including the IEEE World Congress on Computational Intelligence (WCCI2014).
- Several women's Engineering events were organized at Victoria University of Wellington.

B.6 Awards & Recognition Activities

The Joint Signal Processing and Information Theory Chapter received a \$500 Membership Growth Reward, as a result of completing certification the Signal Processing Society in 2013.

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

The Section maintains a home page at <http://ewh.ieee.org/r10/nzc/>. This website is updated at least monthly and hold information on past and future Section events and meetings. These Section events are promoted through various means, including IEEE eNotices and university mailing lists.

B.8 Industry Relations

New Zealand Central is one of the strongest sections in R10 in terms of industry interactions, as evidenced by the number and quality of events organized each year:

A special breakfast event was held on the morning of 22 May 2014 in cooperation with the IEEE, the Institute of Engineering and Technology (IET) Wellington Network and Institute of Professional Engineers of New Zealand (IPENZ) Wellington Branch. Ian McCrae, Founder and CEO of New Zealand's largest health IT exporting company Orion Health spoke on the topic "Health becoming a Data Science by 2020". Big Data, Machine Learning, mHealth, "R", Operations Research, etc, all becoming major enablers of your healthcare in the future, both keeping you well, and ensuring the best care is provided in any care setting, when you are unwell. The event was attended by around 35 people representing the 3 institutions and representing a wide crss section of Wellington industry and generated a very lively interactive session after the presentation.

An industry panel evening was hosted on 23rd October 2014. Six leaders from across the Wellington Information and Communication Industry formed a panel of speakers, who each spoke for 10 minutes followed by 5 minutes of Q&A. The speakers represented the following companies:

- Leon Toorenburg, Chief Technical Officer, ikeGPS
- Nick Wood, Business Manager, Datacom
- Ranil deSilva, Director, PSC
- John Townsend, Senior Network Consultant, Dimension Data
- Owen Borlase, Technical Lead, 4RF Communications
- Brian Smellie, Chief Technology Officer, Tekron International

This event was held to celebrate the Electrical and Electronic industries operating in the greater Wellington Region. The speakers provided an overview of their business and the engineering activities undertaken to deliver world class products and services. This event was enthusiastically enjoyed by around 25 members.

PART C - OTHERS

C.1 Special Events

There are no special events on which to report in addition to what is already listed above.

C.2 Relationship with National Societies

We have joint meetings with IET and IPENZ with a guest speaker.

C.3. Collaboration with other IEEE Sections

Several of our chapters span all three sections within New Zealand, so there is strong interaction at this level, through joint workshops, and getting distinguished lecturers and other high-profile visitors.

Technical co-sponsorship of international conferences organized primarily by one section.

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

Being located in two centres, and with committee members being very busy, we hold executive committee meetings via Skype group call.

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

We found that holding committee meetings via Skype to be an effective form of communication. This approach is without teething problems respect to the technology, but very effective toward mitigating difficulties with respect to the locality and busy schedules of our committee members.

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

Member retention: there is a core of members who are involved and attend most activities, but many others are not directly or actively involved. We plan to survey members to determine how they see IEEE benefiting them.

Recruitment at Universities remains to be a challenge. We hope to propose activities and promotions in 2015 to address this problem.

PART D - GOALS AND PLANS

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

We shall continue our regular events in 2015, including a Breakfast session with Industry Leaders, Postgraduate student presentations, and hosting various Distinguished Lecturer visits.

D.2 Goals and Future Plans

The NZ central section is fortunate to have a relatively large number of industry members. We have organized very successful breakfast meetings attended by senior industry leaders, panel discussions in the universities to encourage students to become members. Postgraduate student presentations have been very popular. We propose to continue this for 2015.

Also, in the 2014 AGM, discussion was held on the student membership grant scheme. We considered how we could encourage undergraduate student membership and participation. The current practise of making a membership grant available to postgraduate students who are involved in a committee role or present at the postgraduate seminar, and to open the membership grants to all undergraduate student members (to the first 30 that apply), subject to review by the committee. As in the past, the student grant policy is to be monitored and presented for discussion at the next AGM.

Attendance of our WIE coordinator at the IEEE Women in Engineering International Leadership Conference (2015 WIE ILC) to be held 23-25 April 2015 in San Jose, California, USA. Unfortunately an application for IEEE travel funds for the trip has been denied, but the NZ Central Section will contribute funds for some of this trip if cofounding can also be found. Attendance at the conference will facilitate learning and exchange ideas from successful persons in this area.

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

Unfortunately, the Section is currently among the lowest in R10 in terms of student recruitment. In 2015, we plan to try several strategies to get more involvement from students. In order to improve our membership numbers we intend to carry a survey amongst potential members on what kind of activities IEEE should do so that they can be paying members. We have also written to members who are in arrears and will continue to do so again.