Annual Report
2014
ENGINEERS AT WORK: Trainees and tutors at The Wearable Electronics Workshop convened
By IEEE Victorian Section Women in Engineering
(see Page 7)  PHOTO: EE HUI LIM
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From the Section Chairman

At this 32nd Annual General Meeting of IEEE Victorian Section, I am pleased to report on the highlights of 2014.

The year started on a high note with presentations in Hobart and Melbourne by Professor Malcolm Heron, Distinguished Lecturer of the IEEE Oceanic Engineering Society. Several months later we held a second Distinguished Lecture in Hobart, this time our visitor was Professor Jovica Milanovic of the University of Manchester. And in October, we hosted a three-part seminar led by Professor Henry Duh of the University of Tasmania. This was the first time that UTAS researchers have presented to an IEEE audience in Melbourne.

In April, our newly formed Systems, Man & Cybernetics Chapter commenced operations and has since held nine (9) technical meetings on a wide range of professional topics. This is a notable achievement for a Chapter not yet 12 months old!

SMC Chapter is based at Deakin University, Waurn Ponds campus, and joins the recently formed Deakin University Student Branch at the same location. These are the first Victorian sub-units to operate outside Metropolitan Melbourne and they will pave the way for similar initiatives elsewhere in the State, consistent with our Section development strategies.

Our new Life Members Affinity Group is another successful venture. It was formed mid-year and has since pursued a lively program of activities of interest to its members and outsiders alike. In fact, the energy displayed by our older members in supporting the LMAG initiative is encouraging indeed!

The Section performed well in the IEEE Australia Council Awards and both La Trobe University and The University of Melbourne Student Branches were honoured for their outstanding performances. There were also several individual Student winners. To add further to the honours list, the University of Melbourne Student WIE Affinity Group received the "Best in World, 2013" award of the IEEE Women in Engineering Global Committee.

In May, the senior Women in Engineering Affinity Group ran a very successful multi-speaker seminar marking the 30th anniversary of the Symposium on Women in Engineering & Computer Science - a pioneering event organised jointly with Engineers Australia and held in Melbourne in August 1983.

Our WIE Group has shown commendable initiative in its program of activities throughout 2014, culminating in November with the successful launch of a Wearable Electronics Workshop - depicted on the front cover of this Annual Report. Similar instructional workshops will be run during 2015.

The Section continues to play a significant role in IEEE affairs beyond our geographic boundaries, notably in the IEEE Australia Council and IEEE Region 10. This is exemplified by our ongoing involvement in ANZSCON,
the biennial Australia-New Zealand Student Congress. Victorian Section was one of the founding partners of this event and was well represented at the 2014 Congress held in Brisbane. We have undertaken to produce a Rules & Guidelines document to guide the bidding and selection processes for future Congresses.

The major International event of the year was the worldwide Sections Congress held in Amsterdam, Netherlands. We sent two delegates to this congress. We also participated in a number of national and regional conferences, some organised in collaboration with neighbouring Sections.

In the year ahead, we will continue working on the long-term development of the Section in several well-defined areas - in our technical chapters, in our student branches and in our regional areas. And similarly - in our ongoing working relationships with universities and industry.

In closing this brief survey of 2014 Section activities, I draw attention to the remarkable level of commitment and unstinting service displayed by many of our officers and volunteers throughout the year. I am greatly indebted to them for their support, and it is this same spirit of adventure and purpose that will take us far in the future.

As an IEEE Section, we have good reason to be confident about our prospects in 2015!

Anthony E. Gascoigne
Chair, IEEE Victorian Section
a.e.g.@.ieee.org
Review of Activities & Operations, 2014

SECTION ELECTIONS

NOMINATIONS were called for the Section Executive Committee in September 2014. Since none of the positions were contested, the 2014 incumbents retain their existing positions for a further 1-year term, with the exception of Secretary Golnar Khomami, who resigned due to academic commitments. No nominations were received for the positions of Secretary and Assistant Treasurer. The elected officers for 2015 are thus as follows:-

- **Chair** – Anthony E. Gascoigne
- **Vice-Chair** – Alan L. Harvey
- **Treasurer** – Enn Vinnal
- **Secretary** – (vacant)
- **Asst. Treasurer** – (vacant)

In accordance with the Section constitution, the vacant positions will be filled by resolutions of the incoming 2015 Section Committee.

Thanks are due to all outgoing members of the 2014 Committee for their valuable service during the past year. Thanks also to the Section Nominations Committee, ably chaired by Dr Ee Hui Lim.

ANNUAL GENERAL MEETING

THE Annual General Meeting of IEEE Victorian Section was held at the Metropolitan Hotel, William Street, Melbourne, on 4th December 2014. Fifty-nine (59) persons attended, including IEEE Members and their partners and invited Guests. Roughly one-third of the attendees were IEEE Student and Graduate Student Members and their partners. We were also pleased to have the company of Professor Yousef Ibrahim of Federation University, Victoria’s (and Australia’s) youngest accredited research university. Prof. Ibrahim gave a brief outline of his professional interests and described features of a forthcoming conference on Mechatronics with which he is associated.

Another highlight of the evening was a brief recital by Ms Harmony Yu, a student at La Trobe University, who plays the *er hu*, a two-stringed traditional Chinese instrument. This performance was very well received and Ms Yu has agreed to perform again at future Section events.

In accordance with our established practice, Cash Awards were presented to the two winners of the Student Paper Travel Grant Competition (see details under Student Paper Awards, overleaf). Also, Certificates of Commendation were presented to outstanding Student volunteers and others who made a notable contribution to section affairs during 2014.

Special thanks are due to all who assisted in the organisation and running of the AGM, and especially Ee Hui Lim and Mehrnaz Shoushtarian.

MEMBERSHIP DEVELOPMENT

THE Section continued to grow at a steady rate during 2014. Final membership statistics are being analysed and will be used to develop our publicity and recruitment strategies in the coming year. We are particularly keen to recruit more members from Industry, and particular strategies to achieve this objective will be implemented during 2015. The preliminary membership tallies as at 31 December 2014 are shown in the Table below.

We are pleased to note that the number of IEEE Fellows in the Section will increase substantially from 1st January 2015, with five (5) new members in this grade, including Prof. Jean Armstrong, our first female Fellow. These 2015 grade elevations were announced late in 2014 but are not shown in the table.

<table>
<thead>
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<th>MEMBER GRADE</th>
<th>2014</th>
<th>2013</th>
<th>% Change</th>
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<td>Fellow</td>
<td>16</td>
<td>16</td>
<td>0</td>
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<tr>
<td>Senior Member</td>
<td>154</td>
<td>150</td>
<td>+2.7</td>
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<tr>
<td>Member</td>
<td>1493</td>
<td>1470</td>
<td>+1.6</td>
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<tr>
<td>Grad.Stud.Mem.</td>
<td>323</td>
<td>327</td>
<td>-1.2</td>
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<tr>
<td>Assoc. Member</td>
<td>38</td>
<td>46</td>
<td>-17</td>
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<tr>
<td>Stud. Member</td>
<td>109</td>
<td>108</td>
<td>+0.9</td>
</tr>
<tr>
<td>TOTALS:</td>
<td>2133</td>
<td>2117</td>
<td>+0.8</td>
</tr>
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CHAPTERS
THE general activity level of our technical chapters increased markedly over that of the previous year. There were 69 events in total - an increase of almost 50% over the 47 held in 2013. Details are given in a later section of this annual report and only a few highlights are noted here.

The successful launch of the new SMC Chapter has already been mentioned in the Chairman's Report and this early success augurs well for the future of the chapter. Among our established chapters, Computer, Signal Processing, Communications and Power and Energy have all performed well and retain their leading positions in our array of subunits.

We now have a total of fifteen (15) Chapters in the Section, including the Society on Social Implications of Technology "Geographic Joint Chapter". The Section was previously a partner in the Oceanic Engineering Society Joint Chapter, but this technical unit is now managed by the IEEE Australia Council.

AFFINITY GROUPS
THE Women in Engineer Affinity Group was particularly active during the year and has displayed commendable initiative in its program of activities. Not least was the inaugural Wearable Electronics Workshop launched in November 2014. The aim of this workshop was to provide basic training in the new field of "wearables" using the Arduino LilyPad circuit board with embedded microcontroller, in a setting that is particularly attractive to females. Trainees were shown how to program the microcontroller, attach the board to fabric, wire-in LEDs and other peripherals using flexible conductive thread, and test the completed system. The Group plans to run similar workshops at regular intervals during 2015.

The Young Professionals Affinity Group held three events, including two joint meetings, and this was a welcome change from the non-compliant levels of activity of recent years. The YPs have planned a more comprehensive program for 2015.

The newly-formed Life Members Affinity Group got off to a good start, with three technical meetings and one administrative meeting, and this group is now making a very positive contribution to Victorian Section affairs. Although the LMAG start-up formalities have yet to be completed because of unexpected delays in the IEEE administrative system, this will on no way inhibit the group's plans and programs during the coming year.

STUDENT BRANCHES
APPROVAL for formation of an IEEE Student Branch at Deakin University in Waurn Ponds, Geelong, was received early in 2014. After a rather hesitant start, the Branch is now quite active and performing well in the Deakin student community.

In an end-of-year assessment by the Victorian Section Committee, Monash University Student Branch was deemed our Outstanding Student Group for 2014. But in fact, almost all Branches have exhibited high levels of commitment and initiative, and this even-ness of performance must be emphasised.

An informal dinner for Student Officers was held in Melbourne in September 2014. This is now a regular calendar event that allows volunteers from the various student branches to become better acquainted. Also, students have an opportunity to discuss their activities with senior members of the Section Committee, in a low-key social environment.

Six months earlier, in March 2014, we held an Introductory Student Workshop in which student members were introduced to the general organisation and operations of the Section. The particular duties of IEEE Student Branch officers and volunteers were highlighted. In view of the success of this inaugural workshop, it will become a regular event in future years.

There are now seven (7) Student Branches operating in Victorian Section. Student activities are covered in greater detail in a later section of this Annual Report.

CONFERENCES
SEVERAL IEEE Conferences and Symposia were held in Melbourne during 2014. Outline details are given below.

ISCAS 2014. The International Symposium on Circuits & Systems was held at the Melbourne Convention Centre from 1-5 June 2014.
Approximately 650 delegates attended and there was a good technical and social program. This year, two visiting professors gave technical seminars apart from their conference presentations, both held at RMIT University.

**ICIMIC 2014.** The 6th International Conference on Modelling, Identification & Control was held in Melbourne from 3rd -5th December 2014. The venue was Swinburne University of Technology, Hawthorn.

**AMS 2014.** The First Australian Microwave Symposium was held at RMIT University, Melbourne, from 26th-27th June 2014. There were 55 registrants at this inaugural event, which was organised by our Microwave Theory & Techniques/ Antennas & Propagation Join Chapter. It is now planned to run this symposium biennially.

**IC3e.** The Third International Conference on e-Learning, e-Management and e-Services was held at Swinburne University of Technology, Hawthorn campus, from 10th-12th December 2014. This three-day event was organised jointly by the Computer Chapters of IEEE Victorian and Malaysian Sections. It was the first of the series to be held in Australia.

Further details of the foregoing conferences are given in the Chapters section of this annual report.

**SECTION WEBSITE**

IN September, our website was disabled by a virus or other malware from an unknown source, causing a complete shutdown on the instructions of the hosting service. This added to pre-existing problems following the unauthorized access and tampering incident of the previous year. We have since moved to a new overseas-based hosting service and started the task of rebuilding the whole site, which is still only partly functional and much further work remaining to be done. Inevitably, there has been considerable disruption to our normal web publicity and other features and caused a great deal of inconvenience. The Section Officers are attempting to expedite this work by all practicable means.

**STUDENT PAPER AWARDS**

THE Student Paper Travel Grant competition provides financial support to IEEE Student Members and Graduate Student Members who present accepted papers at IEEE (or approved non-IEEE) conferences. In 2014 there were two such competitions, one in each half-year. The successful lead-authors were Sergei Chichin of Swinburne University of Technology for a paper titled “Truthful Market-Based Trading of Cloud Services with Reservation Price”, and Fatemeh Jalali of The University of Melbourne for a paper titled "Energy Consumption of Photo Sharing in Online Social Networks”

The standard of papers submitted continued at the commendably high level of recent years.

**SPONSORSHIP & PRIZES**

ALTHOUGH the Section is not by its nature and constitution a grants-giving body, we are pleased to make limited contributions in selected areas wherever our Bylaws and available financial resources permit. During 2013 we continued our support of the Endeavour program at the University of Melbourne, the EnGenius exhibition at RMIT University, the Hooper Memorial Prizes at La Trobe University, and similar awards at Swinburne University of Technology. We expect to continue our sponsorship of these events during the coming year.

**UPLINK**

THREE issues of the Section newsletter *Uplink* were published during 2014. This publication is one of our main channels of publicity and communication for significant IEEE events. We also publish articles on technical, professional and historical topics likely to be of interest to Victorian Section readers.

*Uplink* is edited by Alan Harvey and produced by Peter Barrett and other volunteers. Regular and occasional contributions to this publication are always in demand, and photographs of local events of interest to IEEE members are particularly welcome.

Contributed material should be sent to Dr Harvey at the contact email address given at the end of this Annual Report.

**PERSONNEL**

THERE have been a number of changes in key volunteer positions in the Section during 2014.
In April, EMBS Chapter Chair Dr Saman Haghgooie resigned to take up a position in the USA and Dr Mehrnaz Shoushtarian was appointed in his place. Mehrnaz has continued in her earlier role as Chair of the Women in Engineering Affinity Group, but Dr Ee Hui Lim will take over as WIE Chair in 2015.

Following the resignation of Dr Nasir Uddin as Computer Chapter Chair, Ms Annick Boghossian was elected Chair in his place. Annick was previously Treasurer of the chapter. She is also active in the WIE Affinity Group.

In April, Professor Saeid Nahavandi was appointed as founding Chair of the new SMC Chapter. Saeid is Alfred Deakin Professor of Engineering at Deakin University and Director of the Centre for Intelligent Systems Research. He is based at the Waurn Ponds campus in southwest Geelong.

In May, Dr Keith Adams was similarly appointed as Convener and interim Chair of the Life Members Affinity Group. Keith has extensive experience in academia and industry, both in Australia and overseas.

In June, Mr Claudio Insaurralde joined the Section Committee as a member-at-large. He has since been instrumental in restoring the Technology Management Chapter to 'active' status after several years of inactivity. Claudio was made Acting Chair of that chapter late in 2014.

In accordance with the Section Constitution, all Chapter and Affinity Group Chairs are also members *ex officio* of the Section Executive Committee. We extend a warm welcome to our newly elected and appointed committee members, as above.

**IEEE REGION 10**

TWO meetings of IEEE Region 10 were held during 2014, the regular Annual General Meeting held in Kuching, Malaysia in March and the Extra-Ordinary General Meeting held in Amsterdam, Netherlands, in conjunction with Sections Congress 2014. The Section was represented on both occasions by Section Chairman Anthony Gascoigne, and in Amsterdam he was accompanied by Section Secretary Golnar Khomami.

Both R10 meetings were largely routine in nature, but there were a some lighter moments to compensate. At Kuching, we were treated to a gala banquet-style dinner at which Malaysian dancers and musicians, all dressed in traditional garb, entertained us in a very loud and colourful performance. In Amsterdam, we were eased into our business day with an introductory presentation by local business identity Radboud Molijn, titled "Amsterdam is Water". This was a very interesting historical vignette on the city's age-old battle with the North Sea, and the ways of keeping it *out* of the low-lying land along the Netherlands coastline.

**IEEE GLOBAL**

The major global activity of 2014 was the IEEE Sections Congress held in Amsterdam, as mentioned above. Sections Congresses are convened every three (3) years and provide an opportunity for worldwide collaboration and interaction between IEEE Sections from all over the world. Also, many delegates benefit from the plenary sessions and the broad range of seminars, workshops and discussion groups held at these forums. ■
Section Finances

THIS year we sent two delegates to Sections Congress in Amsterdam, several of our Chapters hosted conferences, we had three Distinguished Lecturer visits, and we ran a very extensive program of technical and social activities throughout the Section (including Tasmania).

At this level of operations, it is perhaps not surprising that our gross outlays during the year reached an all-time high! Fortunately, these expenses were partly offset by the unusually large revenue received.

Consolidated financial results for 2014 show an aggregate operating deficit of $805, which has been financed from cash reserves. On a GST-exclusive basis, total Expenditure for the year was $64,826, the major items being $18,920 in support of member events and activities and $23,965 for conferences. Spending on student activities was $5930 and Sponsorship & Prizes totalled $5432.

Total Revenue was $64,021, the major sources of income being $29,096 generated by conferences and workshops and the annual Section Rebate of $13,095 received from IEEE Headquarters. Interest earned from our bank deposits totalled $6475.

The Section has been assigned a Reserve Allocation Expense of $13,072 as our notional contribution towards liabilities of the IEEE Pension Fund. This is essentially a book entry in the Section accounts, but the stated amount is 'encumbered' to the extent that it cannot be accessed or spent without prior authority to do so.

As to our net cash position, at year-end the Section had aggregate cash reserves of $195,505, with unencumbered reserves of $182,433 after allowing for the above Reserve Allocation item.

Financial highlights of the year are summarised in the adjacent Table. Further details are given in the Accounts appended to this Annual Report.

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<tr>
<th>Item</th>
<th>Amount ($)</th>
<th>% Change from 2013</th>
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</thead>
<tbody>
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<td>Ordinary revenue</td>
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<tr>
<td>Ordinary expenditure</td>
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<td>+114</td>
</tr>
<tr>
<td>Ordinary operating surplus</td>
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<td>--</td>
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<tr>
<td>Extra-ordinary revenue</td>
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<td>Aggregate cash at bank</td>
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<tr>
<td>Bank interest earned</td>
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<tr>
<td>IEEE HQ rebates received</td>
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<tr>
<td>IEEE Reserve Allocation</td>
<td>13,072</td>
<td>-58</td>
</tr>
</tbody>
</table>

* All amounts are exclusive of GST

Enn Vimal
Section Treasurer.
Tasmanian Sub-Section

TWO technical lectures were held in Tasmania during 2014, both being presentations by visiting IEEE Distinguished Lectures.

In February, Professor Malcolm Heron, Research Fellow at James Cook University in Townsville, presented on the topic "HF and VHF Coastal Ocean Radars".

In August, Professor Jovica Milanovic of the University of Manchester, UK, spoke on “Possible Solutions to the Dynamics and Control Challenges of Future Power Networks”.

Both of the foregoing events were held at The University of Tasmania in Hobart. The Heron lecture was repeated in Melbourne on the following evening, 4th February 2014.

In October, Professor Henry Duh of The University of Tasmania, ICT Faculty, visited Melbourne with two associates for a three-part seminar on research at the UTAS Human Interface Technology Laboratory in Launceston. This presentation was made to a meeting of the IEEE Computer Society Chapter of Victorian Section. It was the first recorded occasion on which UTAS researchers have presented to a Melbourne audience.

In the coming year we will proceed further with plans for an IEEE Student Branch at the University of Tasmania. We also hope to establish a local Women in Engineering group, closely affiliated with our main WIE Affinity Group in Melbourne.

All IEEE members resident in Tasmania are invited to join us in these ventures, and in the general renewal of Tasmanian Sub-Section activities. If you are interested in contributing in any way, please advise us by email to contact@ieeevic.org.
The RMIT Electric Racer, part-sponsored by VTS Chapter, IEEE Victorian Section
Deakin University IEEE Student Branch leaders (L-R), Samuel Jones (Secretary), Kristan Marlow (Chair), Housyar Asam (Vice-Chair), Reza Mohajerpoor (Treasurer)
Newly elected Chair of Computer Chapter, Annick Boghossian
La Trobe University student Harmony Yu performs on an *er hu*, December 2014
At the Victorian Section Annual General Meeting, December 2014
Victorian Section Executive Committee members take a break during the 321st committee meeting, March 2014
Chapters & Affinity Groups

CIRCUITS & SYSTEMS/SOLID STATE CIRCUITS CHAPTER
DURING 2014 we organised two technical seminars and two industrial visits. The chapter also assisted in the organisation and running of the ISCAS 2014 Symposium held in Melbourne in June (see earlier report on Conferences).

2014-06-02: Talk by Professor Myung Sunwoo, of Ajou University, Suwon, Korea, on “Low Power Motion Estimation Specific Instruction-set Processors : Novel design challenge for the nano technology era” This event was held at RMIT. There were 6 attendees. (Joint with SP Chapter).

2014-06-04: Talk by Professor Gerald Sobelman, University of Minnesota, titled, “Recent Research Activities in VLSI for Communications”. The venue was RMIT University. There were 21 attendees. (Joint with SP Chapter).

2014-08-20: Our first industrial visit was to Dyne Industries Pty Ltd in Bayswater, Victoria. Managing Director and owner Frank Smit gave us an interesting tour of the plant. We were shown all the steps in small and medium size transformer and magnetic component manufacture, including toroidal transformers. (Joint with Life Members Affinity Group)

2014-11-26: Our second visit was to Wilson Transformer Co. in Glen Waverley. The company manufactures large power transformers, up to 550MVA rating. The plant employees several hundred people and has some quite impressive facilities. (Joint with PES Chapter and Life Members Affinity Group)

ALAN HARVEY, CAS Chapter Chair

COMMUNICATIONS CHAPTER
IN 2014 the chapter organised six technical seminars. Outline details are given below:

2014-04-02: Ms. Trish Messiter, CEO and Director of Business Development for Clarinox Technologies delivered a talk on “Short Range Wireless Technologies for the Internet of Things Era”. Ms. Messiter focused on the development of new products and the refinement of existing short range wireless products in support of the 'connectivity' requirements of the Internet of Things. (Joint with SP Chapter; EEEVic event).

2014-08-10: Mr. Stephen Howell, National Manager - Radio Network Development, Telstra Mobile Evolution, presented a talk titled, “Taking LTE the next step to 5G”. This talk provided an operator's perspective of the next steps in the development of 4G, including the standardisation of 5G technologies and moves to the more data-intensive and 'ubiquitous' world ahead.

2014-10-02: A second talk on developing wireless technologies gave the researcher's perspective. Professor Stephen Hanly of Macquarie University spoke on, “5G Wireless Networks: Small-Cells, Massive MIMO and New Spectrum Opportunities”. Professor Hanly holds the CSIRO-Macquarie University Chair in Wireless Communications. He described the research being undertaken by his group at Macquarie and provided insights into unresolved problems in system design and operation, with some insightful examples.

2014-10-15: Dr Sandro Scalise of the German Aerospace Center (DLR), Munich presented on “The Role of Satellite Communications within Future M2M Systems”. This talk examined the theoretical and experimental work being undertaken at the German Aerospace Centre, particularly the use of satellites in M2M systems. Emerging applications typically involve the sporadic transmission of short messages from/to remote sensors or mobile devices. This will provide a new usage for satellite communication systems, in addition to the classical uses of TV broadcasting and telephony, as an alternative and adjunct to terrestrial wireless networks.

2014-11-11: We were delighted to host a talk by the visiting IEEE Communications Society Distinguished Lecturer Prof. Anura Jayasumana, Dept. of the Electrical & Computer Engineering,
Colorado State University. The title of Professor Jayasumana’s talk was “Network Aware Nodes: A Localisation-Free Self-Organization Approach for Internet of Things”. In this talk he discussed many of the problems for node location in the Internet of Things. The Internet of Things will see massive-scale networks deployed in 2D and complex 3D spaces and workable solutions to the problems of self-organisation, routing and tracking in such networks will be required. Professor Jayasumana described some approaches that he has been pursuing as part of his research program at Colorado State University and also in collaboration with his partners.

2014-11-27: The IEEE P2413 Group is undertaking development of standards for the Internet of Things. A talk titled “Towards a Universal Architecture for the Internet of Things: IEEE Standard P2413” was presented by Mr Rob Gillan, CTO of dZhON Pty Ltd, a Melbourne company, and also Chair of the Networking Subgroup of IEEE P2413. This talk presented background on the establishment and aims of the IEEE P2413 group and the Networking subgroup in particularly. The talk provided some important and intriguing insights into the requirements and timeframes of this work, and in particular, the search for solutions independent of the application or area of use.

Lastly, since I am now stepping down as Chapter Chair, I wish my successor every success in 2015 and beyond.

PAUL FITZPATRICK, ComSoc Chapter Chair 2014.

COMPUTATIONAL INTELLIGENCE CHAPTER
CIS Chapter ran three technical meetings in 2014, outline details as below.

2014-02-06: "Data-Driven Evolutionary Complex Engineering Optimisation" CIS DL Professor Yaochu Jin, University of Surrey, UK. The venue was RMIT University. (Joint with Computer Chapter).

2014-02-07: "Morphogenetic Self-Organisation of Swarm Robots". This lecture was held at Monash University.


KEVIN KORB, CIS Chapter Chair

COMPUTER CHAPTER
DURING 2014, the Computer Society Chapter organised eight (8) events in total. The following is a brief outline of our program.

2014-02-06: This was a well-attended talk on “Data-driven Evolutionary Complex Engineering Optimisation” by Prof. Yaochu Jin. The event was held at Monash University and there were 55 attendees. (Joint with CIS Chapter).

2014-06-26: Chapter Chair Annick Boghossian presented on the topic, “Programming Applications: from Automation to Wearable Microcontrollers”. The event was held at RMIT University. There were 20 persons present. (Joint with WIE Affinity Group).

2014-08-21: At this joint meeting held at the University of Melbourne, Dr Andre Oboler spoke on the topic, “Social Media & Cyber-Racism”. There were 13 attendees. (Joint with UniMelb IEEE Student Branch)

2014-10-08: “The Future of Software Engineering in Australia” by Professor John Grundy (Swinburne University of Technology). The event was held at Swinburne's Hawthorn campus. There were 29 attendees.

2014-10-08: Prior to the above lecture, Professor Grundy was presented with the Distinguished Education Award of the IEEE Technical Council on Software Engineering. Dr. Karl Reed made the formal presentation and gave a lively overview of Prof. Grundy's many achievements in software education.

2014-10-23: This was a technical lecture on “The Internet of Things” by Dr. Arkady Zaslavsky. The
event was held at La Trobe University. There were 17 attendees. (joint with La Trobe Student Branch).

**2014-10-29:** This was a three-part seminar titled, “Current Research Work at the Human Interface Technology Laboratory, Australia”, a research unit of the University of Tasmania. Professor Henry Duh opened with a general overview of the HIT Lab functions and facilities. He was followed in turn by Dr. Winyu Chinthammit and Dr. Zhifeng Bao, who each described aspects of their current research work. This seminar was held at RMIT University. There 18 attendees.

**2014-12-10 to 2014-12-12:** “IC3e 2014” was the third in a series of regional conferences organised jointly with the Computer Chapter of IEEE Malaysia Section and the first to be held in Australia. There were over 45 Registrants at this three-day event, which was held at Swinburne University of Technology in Hawthorn. The conference dinner was held at the Metropolitan Hotel, William Street, Melbourne.

The next conference in this series will be held in Malaysia, further details are available at contact@ieeevic.org.

ANNICK BOGHOSSIAN, CS Chapter Chair

**EDUCATION CHAPTER**

THERE were two meetings of the Education Society Chapter during 2014, both hosted with other local organisations.

**2014-05-12:** Invited technical lecture, "Disciplinarity and Threshold Concepts in Biomedical Engineering Education". The speaker was ES Chapter Chair, Paul Junor. Threshold Concepts Theory is a relatively new way of dealing with the multi-disciplinary strands of biomedical engineering and assisting in course design. This event was held at the University of Melbourne as part of the Biomedical Engineering seminar series. Attendance 25 (approx.)

**2014-10-08:** Seminar/Workshop: “Linking Discipline-Based Research and Teaching to Benefit Student Learning”, by Higher Education Consultant and Researcher Professor Mick Healey, University of Gloucestershire. This interactive presentation explored the complex (and often controversial) relationship between research and teaching. The event was held in conjunction with the La Trobe University Scholarship of Learning and Teaching Research Network. Attendance 30 (approx.)

PAUL JUNOR, EdSoc. Chapter Chair

**ELECTROMAGNETIC COMPATABILITY CHAPTER**

EMC Chapter reported two (2) activities in 2014, both organised jointly with The Electromagnetic Compatibility Society of Australia, a technical unit of Engineers Australia.

The position of Chapter Chair remains vacant and we welcome enquiries from IEEE volunteers concerning this position (Ed.)

**ENGINEERING IN MEDICINE & BIOLOGY CHAPTER**

WE held three (3) technical meetings during 2014, details as below.

**2014-03-05:** Dr William Woods, Swinburne University of Technology, gave an "Overview of Swinburne's Neuro-imaging Facility". The venue was the EA Auditorium in North Melbourne. There were 31 attendees. (Joint with Signal Processing Chapter).

**2014-03-19:** Professor Mike Smith, visiting from the University of Calgary, Canada, presented a lecture titled, "Magnetic Resonance Imaging - The Magic Playground for BME & DSP Applications". There were 34 persons present. (Joint with Signal Processing Chapter).

**2014-12-02:** Professor Zahra Moussavi, from the University of Manitoba, Canada, presented on the topic, "Application of Novel Virtual Reality Technologies in Neuroscience and Diagnosis of Neuro-degenerative Disease. This was an invited DL lecture. There were 23 attendees. (Joint event with Signal Processing Chapter).
MEHRNAZ SHOUSHTARIAN, EMBS Chapter Chair

MICROWAVE THEORY & TECHNIQUES/ANTENNAS & PROPOGATION CHAPTER
DURING 2014 our chapter organised one technical event and one symposium. Brief details are given below.

2014-06-24: "EBG-Inspired Antennas and Other Electromagnetic Structures". This lecture was held at RMIT University.
2014-06-26/27: The First Australian Microwave Symposium, AMS 2014, was held at RMIT and was jointly sponsored by RMIT and IEEE MTT Society. Victorian MTT Chapter was the principal organiser and other Australian chapters also participated. The quality of the papers submitted was commendably high. There were 55 registrants at this inaugural event. It is now planned to run the symposium biennially.

KAMRAN GHORBANI, MTT/AP Chapter Chair

PHOTONICS CHAPTER
OUR Chapter had no activities during 2014.

MALIN PREMARATNE, Photonics Chapter Chair

POWER & ENERGY CHAPTER
PES chapter ran five lectures and one site visit during 2014. Outline details are given below.

2014-05-02: “Safe Use of Electromagnetic Energy and Standards Development Activities of the IEEE/International Committee on Electromagnetic Safety (ICES)”. This seminar was presented by Mr Tan Dovan, who has had extensive experience in Standards development. He reviewed the risks and safety considerations associated with DC & power-frequency applications, also of electromagnetic fields up to 300 GHz. This presentation was held at RMIT University and attracted 38 attendees.

14-07-17: “Turning Electric Current into Light”. This technical lecture was delivered by Mai Yeung from Beca Consultants. Ms Yeung traced the evolution of electric lighting, from incandescent lamps to fluorescent tubes to the latest-generation LEDs. She emphasised the whole-of-life aspects of lighting design. She also mentioned the various backup, emergency and redundancy power supply requirements in airport and railway environments. This presentation was held at RMIT University. There were about 37 attendees. (Joint with WIE Affinity Group)

2014-08-11: “Possible Solutions to Dynamics and Control Challenges of Future Power Networks”.
This was a presentation by PES Distinguished Lecturer Professor Jovica Milanovic, visiting from the University of Manchester, UK. Prof. Milanovic spoke of the diverse range of power technologies that will be incorporated into future power systems, many having inherent temporal uncertainty. There will be a need for flexible hierarchical control structures and high reliance on the use of global rather than local signals for system control. This event was held at The University of Tasmania, Sany Bay. There were 36 attendees. (Joint with Tasmanian Sub-Section).

2014-09-08: “Current Regulation and Active Damping for Grid Connected Converters with LCL Filters”. The presenter was RMIT PhD candidate Stewart Parker. Current regulation is one of the key functions of grid-connected power electronic converters in achieving power quality, dynamic performance, and system stability. Stewart first reviewed the basics of linear current regulation. He then described an active-damping current regulator that suppresses unwanted oscillations without using lossy resistive elements. The presentation was held at Swinburne University of Technology. There were 19 attendees.

2014-09-25: This was a technical lecture by Mr Ian Cook of Metro Trains Melbourne, titled “Emerging Technologies for a More Efficient Passenger Electric Railway System”. Ian has extensive experience in electric railways and is currently with Metro’s Network Strategy & Development
Department. Railways have an inherent advantage as a form of mass transport because of the low energy losses associated with steel wheels rolling on steel rails. But still higher energy efficiencies will be required in future. Such improvements will be supported by energy-storage systems (both onboard and trackside), improved regenerative braking, and 'intelligent' microprocessor-based control systems. There are many engineering challenges ahead in reaching these objectives. This presentation was held at RMIT University. It was well received by the audience of 47 and a lively discussion session followed.

2014-11-26: This was a site visit to the Wilson Transformer Co. manufacturing plant in Glen Waverley, Vic. The plant has impressive facilities and can produce power transformers of up to 550MVA rating at 400kV. There were 26 visitors in this tour. We were cordially hosted by Wilson staff. (Joint with Circuits & Systems Chapter and Life Members Affinity Group).

JOSEPH LEUNG, PES Chapter Chair

SIGNAL PROCESSING CHAPTER

WE organised or co-organised nine (9) technical activities during the year, outline details of which are given below.

2014-02-19: Talk on “Structural Optimization of Neurofuzzy Systems for Data Modelling and Time Series Analysis”, by Dr. Massimo Panella, University of Rome "La Sapienza" in collaboration with RMIT University. There were 52 attendees. (EEEVic event).

2014-03-05: Talk by Will Woods, Swinburne University of Technology, titled “Overview of Swinburne's Neuroimaging Facility”. There were 31 attendees. (Joint with EMBS Chapter; EEEVic event).

2014-03-19: Talk by Prof Mike Smith from The University of Calgary, Canada, on “Magnetic Resonance Imaging – The Magic Playground for BME & DSP Application”. There were 34 attendees. (Joint with EMBS Chapter; EEEVic event).

2014-04-02: Talk by Trish Messiter, CEO and Director of Business Development of Clarinox Technologies Pty Ltd., on “Short Range Wireless Technologies for the Internet of Things Era”. 43 attendees; (Joint with ComSoc Chapter; EEEVic event).

2014-06-02: Talk by Prof Myung Sunwoo, School of ECE Ajou University, Suwon, Korea, on “Low Power Motion Estimation Specific Instruction-set Processors : Novel design challenge for the nano technology era”. There were 6 attendees. (Joint with CAS Chapter).

2014-06-04: Talk by Prof Gerald Sobelman, University of Minnesota, titled, “Recent Research Activities in VLSI for Communications”. There were 21 attendees. (Joint with CAS Chapter).

2014-07-02: Talk by Gary Quinn, Chief Engineer, Environmental Systems and Services P/L titled, “A Big Future for Small Satellites”. 42 attendees. (Joint ComSoc Chapter; promoted as EEEVic event).

2014-10-17: This was a presentation by IEEE SPS Distinguished Lecturer, Professor John V. Matthews, titled, “Signal Processing for Diagnostic Medicine”. Prof. Matthews was visiting from the University of Utah, USA. The event was held at The University of Melbourne and there were 8 attendees. (EEEVic event).

2014-12-02: Talk by IEEE EMBS DL, Professor Zahra Mousavi, Professor and Canada Research Chair in Biomedical Engineering at the University of Manitoba, titled, “Application of Novel Virtual Reality Technologies in Neuroscience and Diagnosis of Neurodegenerative diseases”. Attendance 23. (Joint with EMBS Chapter; promoted as EEEVic event)

2014-12-02: Talk by IEEE EMBS DL, Professor Zahra Mousavi, Professor and Canada Research Chair in Biomedical Engineering at the University of Manitoba, titled, “Application of Novel Virtual Reality Technologies in Neuroscience and Diagnosis of Neurodegenerative diseases”. Attendance 23. (Joint with EMBS Chapter; promoted as EEEVic event)

The Chapter Committee consists of Karim Seghouane (Chair) and Robert Slaviero (Secretary). We operate an SPS Chapter page on the Section website and issue regular news bulletins to chapter members.

ROBERT SLAVIERO, SPS Chapter Secretary
SOCIAL IMPLICATIONS OF TECHNOLOGY

JOINT AUSTRALIAN CHAPTER

SSIT Chapter organised or co-organised a total of seven events during 2014, variously located in Sydney and Melbourne. Outline details are given below.

2014-04-09: Presentation by Professor Roger Hadgraft of Central Queensland University on the topic, “Educa**ing** Sustainability Engineers - Redesigning Curricula”. Professor Hadgraft is the new Deputy Dean, Learning and Teaching, in the School of Engineering and Technology at CQU. This event was hosted by The Melbourne Emergence Group and held at CQU’s Melbourne campus in Lonsdale Street. There were 15 attendees.

2014-05-22: David Vaile spoke on the topic, “Big Data: The Challenge to Privacy and Informed Consent”. It was an excellent overview of the technical and policy issues arising from Big Data.
systems. The event was held at the Faculty of Law, UNSW, Kensington. There were 22 attendees. (co-hosted by IEEE/CLPC).

2014-07-07: This was an informal presentation by Philip Hall on the topic, “Water Energy, Food Security: Integrated Technology Solutions for Sustainability”. The event was held at Naughton’s Hotel, Parkville. There were 5 attendees.

2014-07-31: Dr Andre Oboler spoke on the topic, “Social Media & Cyber-Racism”. The event was held at the Faculty of Law, UNSW, Kensington Campus. There were 12 attendees. (Joint with the Computer Chapter of IEEE NSW Section).

2014-09-29: This workshop session, "Remotely Piloted Vehicles and Related Technologies", was chaired by Philip Hall and was part of The Eighth Workshop on the Social Implications of National Security held at The University of Melbourne, Parkville. (Jointly organised by SSIT Australia Chapter, the IEEE-USA Committee on Transportation and Aerospace Policy, and several other organisations).

2014-10-02: Dr R.E. Burnett (USA National Defense University) spoke on the topic, “US National Defense Activities in Relation to Drones”. Dr Burnett is a T&S writer on information weapons. He has participated in R&D in the Genetics field and has a particular interest in Information Ethics. The event was held at Café Trevi, Lygon Street, Melbourne. There were 12 attendees.

2014-10-30: A panel of experts from industry, academia and government addressed the topic, “Self-Driving Cars: Fiction or Reality?”. The event was held at Wesley Conference Centre, Sydney, and attracted 35 attendees. (Joint with several chapters of IEEE NSW Section).

In other news, Past Chapter Chair Greg Adamson has recently been elected Society President of SSIT and takes office in 2015.

Since this is my last report as Chapter Secretary, I wish my successor and other members of the chapter executive every success in the future.

SOPHIE MCKENZIE, SSIT Chapter Secretary

TECHNOLOGY MANAGEMENT CHAPTER

TM Chapter organised or co-organised three technical talks during 2014.

2014-10-01: Ms Caroline Knight presented on the topic, “From Management to Leadership: A Personal Story”. Ms Knight is founder and CEO of Greyfriar Group and board member of Life Education Victoria and the Australian Institute of Management. She is a grandniece of Jane Austen, the renowned 19th century literary figure, and was raised in the ancestral home in Hamstead, England. There were 29 attendees. (Event joint with WIE Affinity Group and promoted through EEEVic).}

2014-10-16: Ms Satya Tanner presented on, “A Bird's Eye View of Strategies for Leadership Success”. Ms Tanner had a 16-year career as a pilot and aerospace engineer in the Royal Australian Air Force and is currently working as a consultant. She said leaders should inspire and influence those around them, and showed how the skills required for effective leadership can be developed. There were 24 attendees. (Joint with Young Professionals Affinity Group).

2014-12-16: Mr Malcolm Eccles presented the talk, “The Basslink Project: Connecting the Transmission systems of Tasmania and Victoria”. Mr. Eccles is CEO and Managing Director of Basslink Group. He reviewed the history of Basslink from inception through to operations, and described the stages of planning, constructing and operating this major engineering project. There were 47 attendees. (Joint with IEEE Young Professionals and co-promoted as an EEEVic event).

CLAUDIO INSAURRALDE, Acting Chair, TMC Chapter

VEHICULAR TECHNOLOGY CHAPTER

The VTS Chapter ran four (4) technical events during 2014, summary details as below.

2014-03-07: Professor Ari Ide of Kyoto University, Japan, spoke on, “Ultra-High Resolution High Colour Fidelity Imaging”. The venue was Swinburne University of Technology. There were
twenty-five people in attendance.

**2014-04-09:** Assoc. Prof. Hussein Dia presented on the topic, "Mimicking Human Senses: The Convergence of Sensor-Based and Connectivity-Based Vehicle Technologies". There were 27 attendees.

**2014-05-27:** Dr Klaus Fischer, visiting from Germany, spoke on, "Hydrogen & Fuel Cell Technology in Modern Hybrid New-Energy Systems". There were 35 present.

**2014-12-3/5:** The Chapter was co-organiser of the 6th International Conference on Modelling, Identification & Control (ICMIC 2014).

Another highlight of the year was our involvement with the 3rd International Conference on e-Learning, e-Management and e-Services. Both of the foregoing conference were held at Swinburne University of Technology during December 2014.

Finally, VTS Chapter was a Sponsor of the SAE Formula One Electric Racer of RMIT University.

**MEHRAN EKTESABI, VTS Chapter Chair**

**LIFE MEMBERS AFFINITY GROUP**

Early in 2014, Victorian Section Committee approved the formation of a The Life Members Affinity Group. Keith Adams was appointed as Convener and Interim Chair of the new group and the required Petition was subsequently submitted to IEEE Headquarters. There have been four successful meetings of this group-in-formation, as outlined below.

**2014-07-10:** The first meeting was called to sign the formal Petition and ten members attended for this purpose. Subsequently, ten further signatures were added. A provisional committee was elected, consisting of Mike Osborne, Harvey Cohen and Keith Adams as Convener.

**2014-08-20:** Our first industrial visit was to Dyne Industries Pty Ltd in Bayswater, Vic. We had a most enjoyable tour of the Dyne facilities and noted the wide range of technologies required to produce transformers ranging in size from a few millimeters in diameter, up to ratings of 40kVA.

**2014-10-07:** This was a technical lecture titled, "Early Radio – From Novelty to Ubiquity". It was presented by Interim Committee member, Mike Osborne, who is also incoming president of the Historical Radio Society of Australia. This was a very informative talk that highlighted some of the political and commercial issues surrounding early radio broadcasting in Australia. The venue was RMIT University. There were about 20 members and visitors present.

**2014-11-26:** Our second industrial visit was to Wilson Transformer Company in Glen Waverley, Vic. This plant produces large power transformers with ratings up to 550 MVA at 400 kV. The manufacturing and testing facilities are most impressive. This all-Australian company has operated since the 1930’s. It has not only survived despite intense overseas-based competition, but is now investing heavily in its future. About 26 persons attended this visit. (Joint with PES and CAS Chapters).

As a closing comment, in December 2014 I attended the annual IEEE Victorian Section AGM and Dinner. The opportunity for older members to meet the up-and-coming generation and to celebrate their recent successes was much appreciated.

**KEITH ADAMS, Convener & Interim Chair, Life Member Affinity Group.**

**YOUNG PROFESSIONALS AFFINITY GROUP**

Our YP Group organised or co-organised three events during 2014.

**2014-10-16:** This was a talk titled, "A Bird’s Eye View of Strategies for Leadership Success". The presenter was Ms Satya Tanner, who has a diverse background in the Australian Defence Force and commerce and is now a management consultant. Twenty-four persons attended, including 17 YP members. The venue was The University of Melbourne, Parkville. (Joint with Technical Management Chapter).

**2014-11-26:** This brief technical presentation was
titled, "Gaze Tracking from Ordinary Webcams". The presenter was Dr. Alan Zhang from Xlabs, a Melbourne start-up company. He showed movie shots of his system in operation. There were twelve persons present, (11 YP members).

2014-12-16: This lecture was titled, "The Basslink Project - Connecting the Transmission Systems of Tasmania and Victoria". The presenter was Mr Malcolm Eccles, CEO of Basslink Pty Ltd. He described the main features of this unique project and its many challenges in design and construction. There were 47 persons present, including 21 IEEE Members. (Joint with Technology Management and PES Chapters).

In other news, our Group recently received a cash grant from IEEE Region 10 in support of the "YP Smart Idea Challenge". This new competition is designed to encourage practical proposals and innovative solutions by our members, in the fields of Engineering and Information Technology. The inaugural Award was made to Mr. Farzad Khodadai of the ICT Department, University of Melbourne, for his project titled, "A Ubiquitous Framework for Programming and Orchestrating Workflows in the Internet of Things".

LEILA KOUSHAEIAN, YP Affinity Group Chair

WOMEN IN ENGINEERING
AFFINITY GROUP

Our WIE Group ran five technical and special-interest events during 2014. Outline details are given below.

2014-05-22: This event marked the 30th anniversary of the first WIE conference ever held in Melbourne (and probably Australia). We first had individual presentations from our three speakers outlining their career experiences, followed by a panel discussion on the changes in professional engineering employment opportunities for females over the past 30 years. The speakers were Professor Jean Armstrong from Monash University, Dr Reyhaneh Hesami from Yarra Trams and Ms Teagan Dowler from The Blue Collared Woman.

The venue was the Brown Theatre at The University of Melbourne. It was a very successful event with a total attendance of sixty-one (61). (Joint with Engineers Australia Women in Engineering).

2014-06-26: In this technical presentation, Annick Boghossian from Thiess Pty Ltd gave an outline of her career background and current professional interests under the heading, "Programming Applications: From Automation to Wearable Microcontrollers". Twenty persons attended this lecture, which was held at RMIT University. (Joint with Computer Chapter).

2014-07-17: Mai Yeung from Beca Consulting, Sydney office, gave an interesting lecture titled, "Turning Electric Current into Light". Starting with a review of lighting fundamentals, Mai described the evolution of lighting technology from incandescent filament lamps to modern LED implementations. She referred to the special system design and reliability requirements of aviation and railway applications. The venue was RMIT University and there were 38 attendees. (Joint with PES Chapter).

2014-10-01: Caroline Knight, CEO of Greyfriar Group, spoke on, "Personal Goals, Vision, Branding and Resilience". Caroline gave an outline of her employment background and described her outlook and strategies as a business consultant. This event was held at the Engineers Australia auditorium in North Melbourne. There were 29 attendees. (Joint with Technology Management Chapter).

2014-11-22: This was our first training workshop titled, "The LilyPad Arduino". Its aim was to demonstrate the use and applications of the Lilypad Arduino, a 'sewable' microcontroller board, and provide basic training to beginners and more advanced programmers in a creative environment that is particularly attractive for females. We plan to run similar workshops at various levels of scope and advancement during 2015. The inaugural event was held at RMIT University. There were six trainees present and four tutors.

MEHRNAZ SHOUSHTARIAN, WIE Affinity Group Chair.
Student Branches

DEAKIN UNIVERSITY STUDENT BRANCH
Our IEEE Student Branch organised three events/activities during 2014, our inaugural year.

2014-03-04: We participated in the "market and stalls day" of the Deakin University Students Association. This was an opportunity to advertise our existence to the student body and recruit new members.

2014-07-18: Welcome BBQ followed by a technical lecture titled, "Multi-scale Robotics Based on the Cellular Robotics System. The presenter was Professor Fukuda from Tokyo University. We had over 70 attend the BBQ. The event was very successful and well received by all who attended. (Joint with IEEE SMC Chapter).

2014-08-05: To stimulate interest in our Student Branch we created two Poster competitions and a Branch Logo and Slogan competition. Entries were received for all categories except the undergraduate poster competition. Both poster competitions will be run again next year.

In other news, we recently launched the DUSB website (http://sites.ieee.org/sb-dusb/) together with online media. This will allow us to operate much more effectively in the coming year.

Overall, our inaugural year was quite successful and laid the foundations for further development of our IEEE Student Branch in 2015.

KRISTAN MARLOW, Chair, Deakin University Student Branch

LA TROBE UNIVERSITY STUDENT BRANCH
During 2014 our Student Branch organised or participated in a total of twenty-seven (27) events of which a small selection are noted. A full report on our activities is available at (…….) s

2014-04-14: Guest speaker Dr. Jim Park gave an hour-long presentation in which he explained how the law works in relation to the engineer’s role in industry, and the many ways it affects the work they do. Dr. Park shared his experiences working alongside lawyers in his role as an expert advisor at the ACCC.

2014-04-30: This was a barbeque at which we sought to increase the general awareness of our activities. We distributed promotional material and signed up several new members.

2014-05-07: Dr Jonathan Stanger presented a seminar on the topic of Electro-Spinning. The background theory of the process is quite complex and involves the nature of electric charge distribution within this physical system.

2014-05-23: Dr Stuart Anderson presented a seminar titled, "Radiowave Polarisation and Depolarisation in High Frequency Skywave Propagation”. Dr Anderson explained the need to take polarisation modulation into account when operating skywave radars. He also described the properties of vortex fields and showed the potential utility of such fields for ionospheric investigations.

2014-08-24: The student branch participated in the La Trobe University Open Day at Bundoora. The projects displayed included Robogolf, a moving-target shooting gallery, and 3D printing. We also ran Open Day events at La Trobe’s regional campuses in Bendigo and Wodonga.

2014-09-15: Guest lecturer Gary Quinn presented a technical seminar titled, "A Big Future for Small Satellites". This talk described the new generation of small satellites and discussed present-day and likely future applications for such systems. Gary is a La Trobe University graduate in Communications Engineering who now works for ES&S.

2014-09-24: Dr Peter Moar presented on the topic, “Securing International Work Experience and Research Partnerships”. He highlighted the many ways in which Australian universities can establish valuable overseas contacts through student and staff mobility and links with major trans-national organisations.

2014-10-17: Dr Greg Adamson spoke on the topic,
“Social Responsibilities of Engineers”. His presentation was based on his planned address to the UNESCO-sponsored World Engineering Conference and Convention, to be held in Kyoto, Japan, in November 2015.

2014-10-23: Presentation by Dr Arkady Zaslavsky on the topic, "The Internet of Things". This event was held at La Trobe’s city campus. Our Branch helped with the organisation of this event. (Joint with Computer Chapter).

2014-11-25: The 22nd Annual Engineering & IT Showcase was held at La Trobe's Bundoora campus. This a "pinnacle" annual event at our university and in 2014 was attended by over 350 patrons and guests, some visiting from as far away as Albury-Wodonga and Mildura. Our Branch helped with the running of this event.

MATTHEW FELICETTI, Chair, La Trobe University Student Branch

MONASH UNIVERSITY STUDENT BRANCH

During 2014 we averaged two activities per month and selected events are noted below. Further details are given in our Student Branch Annual Report.

2014-03-31: This was a training workshop on Altium Designer conducted by Monash postgraduate students Simon Kennedy, Samuel Pang, Kasun Thotahewa and Dilpreet Buxi. Due to popular demand, the workshop was repeated on 3rd April. There were 30 attendees in total and we received very positive feedback.

2014-04-17: This Pizza Event was held as a welcome to new postgraduate students. We had a couple of introductions, played some games, then heard a brief presentation on the activities of Monash Student Branch.

2014-05-27 - 2014-06-04: Our principal event of the year was a Career Development Program aimed at helping students to identify career pathways and providing them with practical knowledge and advice in pursuing their personal goals. There were several individual and Discussion Panel presentations.

2014-07-21: This was an excursion to VicRoads Head Office in Kew, facilitated by our industry mentor, Mr. Les Davey. Mr. Andrew W. Eckersley of Vicroads briefed us on the operation of the Traffic Management System while watching it live in action from the meeting room. It was a very enjoyable and informative visit, attended by 20 students.

2014-07-25: Mr Stephen Howell of Telstra gave a talk on “Mobile Evolution - Taking LTE the next step to 5G”. He covered the new services that customers can expect in future as well as the current areas of research into mobile network development, looking forward to 2020.

2014-08-13: This was a training course on C++ basics, conducted by Alexander Senior, Andrew Spek, Ben Harwood, Moses Wan, Winston Yii and Tony Grubman. Fifteen students attended. Topics covered included classes, inheritance, polymorphism, standard libraries and network communications. Overall, students were very happy with the initiative and the course was repeated several times on later dates.

2014-08-22: Prof Ken Thompson (University of Edinburgh) gave an overview talk on "Green Wireless Communications Research at The University of Edinburgh". Mobile base stations have large energy demands and are a particular target of such research. The project was a major collaboration between academic and industrial researchers in the UK.

2014-11-18: This was our annual "grudge" soccer match between students and staff of ECSE. It is always a popular event and this year was no exception, with 26 players in total and 10 spectators. In a very close game, the students won 6-5.

2014-12-12: This was our Annual General Meeting, at which we heard brief reports on our activities in 2014. We also held an election for all positions on the 2015 Student Branch Committee.

DILPREET BUXI, Chair, Monash University Student Branch
RMIT UNIVERSITY STUDENT BRANCH
There were no reported activities by RMIT Student Branch during 2014 (Ed.)

SWINBURNE UNIVERSITY OF TECHNOLOGY STUDENT BRANCH
We organised two technical events during 2014, outline details as below.

2014-05-23: This was an end-of-semester barbeque. It was a successful social event with sixty (60) people present.

2014-10-28: In this technical presentation, Cishen Zhang spoke on the general principles of Compressed Sampling. It was an introductory treatment intended to engage the interest of new and prospective students. There were 15 attendees.

At the end of the year, our student branch provided general support for the EC3e Conference. There were fifty-five (55) registrants at this event, which was jointly organised by the Computer Chapters of IEEE Victorian and Malaysia Sections. It was held at the Swinburne Hawthorn, Vic., campus.

MANOJ VEMURI, Chair, SUT Student Branch

UNIVERSITY OF MELBOURNE STUDENT BRANCH
The following are some of the events organised by our student branch in 2014.

2014-02-27: During the university Orientation Week we ran a promotional campaign jointly with the UniMelb Electrical Engineering Club. New students were given a flyer with general information about the IEE and our student branch, including an outline of our planned activity program.

2014-03-07: In this technical presentation titled, "Cyber-Security Challenge Roadshow", speakers from the Department of the Prime Minister and Cabinet, Department of Defence, Telstra, CERT Australia and PwC described the National Cyber Security Challenge, Australia’s only national cyber security competition. About 32 people attended. (Joint with UniMelb Electrical Engineering Club).

2014-03-07: The University of Melbourne IEEE Women in Engineering Student Affinity Group held a luncheon to celebrate International Women’s Day. at a luncheon. There were three inspirational speakers who each outlined their career experiences as professional engineers.

2014-03-11: In this Information Session, Ericsson Australia was invited to make a presentation on the company's graduate program. Students had an opportunity to meet Ericsson engineers and HR representatives. About 30 people attended this event (Jointly organised with the Department of Electrical and Electronic Engineering).

2014-03-13: We organised two very successful field trips to Toyota’s assembly plant in Altona North, which is a world-class manufacturing facility. In view of the continuing interest, a follow-up visit was arranged on 25th March. Both tours were fully booked out with 33 people attending on each occasion.

2014-05-27: Siemens Ltd invited members of our Branch to their Victorian head office in Bayswater. Several free full-day training sessions were on offer, ranging from project management to distributed control systems and the latest automation products. This valuable opportunity was shared with IEEE Victorian Section members. About 20 people registered for the sessions. The whole exercise was repeated on 30th May.

2014-07-27: 'Hackathon' is an annual event held on university campuses around the world. It is an exciting opportunity for women in computing and technology to network and collaborate on Microsoft projects over a three-day period. The event was broadcast live worldwide via Skype and four invited Mentors helped students with their projects. About 15 people participated in Melbourne.

2014-07-30: The University of Melbourne IEEE-WIE Affinity Group organised a successful workshop on ‘The Importance of Confidence, Building It, Living It and the Art of Faking It’. The workshop was conducted by Ms. Teagan Dower,
founder of her own company, Blue Collared Women. About 40 people attended.

**2014-10-07:** This was a student get-together to celebrate ‘IEEE Day 2014’. Apart from the socialising, it served as a platform to encourage new students to join IEEE and our student branch. The event was organised jointly with the UniMelb Department of Computer and Information Systems. The attendance was over 75.

**2014-12-01:** We held our annual general meeting and dinner at the Kitchen Workshop, Crown Complex, Melbourne. We were pleased to welcome guests from IEEE Victorian Section and other IEEE societies.

In other news, UniMelb was runner-up in the IEEE Outstanding Student Branch Competition for the year 2013. Also, our WIE Affinity Group was awarded ‘Best IEEE WIE Student Affinity Group’ of year 2013. Two members of our Branch were awarded Richard E. Merwin Student Scholarships by the IEEE Computer Society. Another member won First Prize in the IEEE Australian Council Best Paper Contest, 2013.

DINUKA KUDAWITHAN, Chair, UniMelb Student Branch

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**VICTORIA UNIVERSITY STUDENT BRANCH**

During 2014 we organised two technical meetings.

**2014-03-13:** Professor Jean Armstrong of Monash University spoke on one of her research specialties, "Visible Light Communications and Visible Light Positioning". This was a very interesting lecture. We had 33 persons attend.

**2014-06-06:** Dr Antoine Frappe presented on the topic, "Digital Signal Generation - Towards Ultimate Transmitters". There were 30 attendees.

In other news, on 01 June one of our members, Mirhojat Seyedi, attended the ISCAS 2014 Conference in Melbourne.

MARZIYEH NAZARI, Chair, VU Student Branch.
Section and Chapter Officers, 2014

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Enn Vinnal - Treasurer, IEEE Victorian Section, Email: e.vinnal@ieee.org
Golnar Khomami - Secretary, IEEE Victorian Section, Email: g.khomami@ieee.org

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For further contact details, please visit the Victorian Section website at www.ieeevic.org or email to contact@ieeevic.org
## I. Consolidated Operating Statement 2014 (calendar year)

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<th>2014</th>
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<td>Sections Congress (SC’14) Subsidies</td>
<td>4,172</td>
<td>0</td>
</tr>
<tr>
<td>Rebate from IEEE HQ</td>
<td>13,095</td>
<td>11,305</td>
</tr>
<tr>
<td>IEEE Societies</td>
<td>1,959</td>
<td>1,190</td>
</tr>
<tr>
<td>IEEE Region 10</td>
<td>939</td>
<td>0</td>
</tr>
<tr>
<td>IEEE Australia Council</td>
<td>1,950</td>
<td>0</td>
</tr>
<tr>
<td>Bank Interest</td>
<td>6,475</td>
<td>4,087</td>
</tr>
<tr>
<td>Miscellaneous receipts</td>
<td>1,432</td>
<td>0</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td>64,021</td>
<td>21,550</td>
</tr>
<tr>
<td>Extra-ordinary Society Income</td>
<td>0</td>
<td>1,078</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>64,021</td>
<td>22,628</td>
</tr>
</tbody>
</table>

| **Expenditure**        |        |        |
| Meetings & Social      | 18,920 | 13,029 |
| Conferences/Workshops  | 23,965 | 0      |
| Student Activities     | 5,930  | 12,303 |
| Sections Congress (SC’14) Expenses | 3,757  | 0      |
| Grants & Awards        | 5,432  | 2,000  |
| Travel & Accommodation | 5,199  | 0      |
| Publication Expenses   | 808    | 316    |
| IEEE Australia Council Levy | 0  | 0      |
| Postage, Printing, Supplies & Miscellaneous | 815  | 2,614  |
| **Sub-total**          | 64,826 | 30,262 |
| Extra-ordinary Society Expenditure | 0  | 6,002  |
| **Total**              | 64,826 | 36,264 |

**Surplus / deficit without extra-ordinary item:**
- 2014: -805
- 2013: -8,712

**Surplus / deficit with extra-ordinary items:**
- 2014: -805
- 2013: -13,636

**NOTES:**
1. These are unaudited accounts
2. All receipts and expenditure listed exclude GST
II. Balance Sheet as at 31 December 2014

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash at bank</td>
<td>195,505</td>
<td>186,300</td>
</tr>
<tr>
<td>Receivables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- accounts receivable</td>
<td>1,000</td>
<td>0</td>
</tr>
<tr>
<td>- seed loans at call</td>
<td>4,111</td>
<td>4,111</td>
</tr>
<tr>
<td>- GST tax credits</td>
<td>2,313</td>
<td>711</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Payables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- accounts payable</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>- loan repayments</td>
<td>10,000</td>
<td>0</td>
</tr>
<tr>
<td>- ATO creditors</td>
<td>1,929</td>
<td>0</td>
</tr>
<tr>
<td>- other creditors</td>
<td>490</td>
<td>1,095</td>
</tr>
<tr>
<td>Provisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- doubtful debts</td>
<td>4,111</td>
<td>4,111</td>
</tr>
<tr>
<td><strong>Net assets</strong></td>
<td>186,399</td>
<td>185,916</td>
</tr>
<tr>
<td>Reserves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- IEEE Reserve Allocation (IEEE Pension Fund)</td>
<td>13,072</td>
<td>31,491</td>
</tr>
<tr>
<td><strong>Net Assets less Section Reserve</strong></td>
<td>173,327</td>
<td>154,425</td>
</tr>
</tbody>
</table>

**NOTE:** All income and expense items are ex-GST.
Consolidated List of Section Events for 2014

2014-02-03  Coastal Ocean Radars: Principles, Results & Applications. Tasmanian Sub-Section
2014-02-04  Coastal Ocean Radars: Principles, Results & Applications. Victorian Section
2014-02-06  Data-Driven Evolutionary Complex Engineering Optimisation. CIS Chapter
2014-02-07  Morphogenetic Self-Organisation of Swarm Robots. CIS Chapter
2014-03-05  Overview of Swinburne University of Technology Neuroimaging Facility. EMBS Chapter.
2014-03-07  Ultra-High Resolution High Colour Fidelity Imaging. VTS Chapter
2014-03-07  Safe Use of Electromagnetic Energy & Standards Development Activities of the International Communications
2014-03-12  Threshold Concepts and Disciplinarity in Biomedical Engineering Education. Education Chapter
2014-04-02  Short Range Wireless Technologies for the Internet of Things. ComSoc Chapter
2014-04-09  Women in Engineering: 30 Years On. WIE Affinity Group
2014-04-09  Educating Sustainability Engineers - Redesigning Curricula. SSIT Chapter
2014-04-16  Student Branches Introductory Meeting. CAS Chapter
2014-04-16  Threshold Concepts and Disciplinarity in Biomedical Engineering Education. Education Chapter
2014-05-02  Magnetic Resonance Imaging - The Magic Playground for BME & DSP Applications. EMBS Chapter
2014-07-02  A Big Future for Small Satellites. SP Chapter
2014-07-07  Turning Electric Current into Light. WIE Affinity Group/PES Chapter
2014-07-17  Multi-Scale Robotics. SMC Chapter
2014-07-23  Composition of Attractor Basins for Dexterous Robotic Tasks. SMC Chapter
2014-08-20  Visit to Dyne Industries Pty Ltd. CAS Chapter/LMAG
2014-08-21  Mobile Evolution - Taking LTE the Next Step to 5G. ComSoc Chapter
2014-09-29  The Eighth Workshop on the Implications of National Security: Remotely Piloted Vehicles. SSIT Chapter
2014-09-30  Possible Solutions to Dynamics & Control Problems in Electric Power Systems. PES Chapter/Tasmanian Sub-Section
2014-09-30  Self-Driving Cars: Fiction or Reality?  SSIT Chapter
2014-10-01  Discontinuous Control Systems: Past Present & Future. SMC Chapter
2014-10-01  From Management to Leadership: A Personal Story. Technology Management Chapter
2014-10-01  Personal Goals, Vision, Branding & Resilience. WIE Affinity Group
2014-10-02  National Defence Activities in Regard to Drones.  SSIT Chapter
2014-10-08  Linking Discipline-Based Research. EdSoc Chapter
2014-10-08  Presentation of the IEEE Council on Software Engineering. Computer Chapter
2014-10-08  The Future of Software Engineering in Australia
2014-10-08  Early Radio - From Novelty to Ubiquity. LMAG
2014-10-16  Bird’s Eye View on Strategies for Leadership Success. Technology Management Chapter
2014-10-20  SMC lecture. SMC Chapter
2014-10-23  The Internet of Things. Computer Chapter
2014-10-28  Tech talk. Signal Processing Chapter
2014-10-29  Current Research Work at the Human Interface Technology Laboratory, UTAS. Computer Chapter
2014-10-30  EMC Workshop. EMC Chapter
2014-11-10  Electromagnetic Interference Attenuation Test of the Space Shuttle Discovery Using AFRL Mobile. MTT/AP Chapter
2014-11-22  Arduino-Lilypad Workshop. WIE Affinity Group
2014-11-26  Visit to Wilson Transformer Co. LMAG/CAS Chapter/PES Chapter
2014-11-26  Gaze Tracking from an Ordinary Webcam. YP Affinity Group
2014-11-27  Towards a Universal Architecture for the Internet of Things. ComSoc Chapter
2014-12-02  Application of Novel Virtual Reality Technologies in Neuroscience and Diagnosis of Neuro-degenerative Disease. EMBS Chapter
2014-12-03  6th International Conference on Modelling Identification & Control (ICMIC-2014). VTS Chapter
2014-12-16  The Basslink Project: Connecting the Transmission Systems of Tasmania and Victoria. PES/Technology Management Chapters/YPAG
2014-12-17  Assessment of Memory Cushions in Aircraft Seating for Injury Mitigation Through Dynamic Impact Test. SMC Chapter