CONNECT:
ENGINEERING & INFORMATION SCIENCES NEWSLETTER

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FACULTY OF ENGINEERING AND INFORMATION SCIENCES | UNIVERSITY OF WOLLONGONG

EIS News Contents

Message from the Dean

It's the time of the year for Season's Greetings and Graduation ceremonies again, and we congratulate our many students who are graduating this week after all their hard work. Due to the amalgamation of the previous Faculties of Engineering and Informatics into one Faculty of Engineering and Information Sciences, we are now a much bigger faculty and our graduation ceremonies had to be spread out over two separate ceremonies. About 250 students who came to us from Australia and more than 30 other countries graduated in each of these ceremonies. These included undergraduate degrees from all our seven Schools covering engineering, mathematics, physics and information technology and communications areas. Graduates from all our course work Masters degrees, which build on bachelor degrees to provide greater depth and breadth in disciplines, were also awarded. Degrees awarded in these ceremonies include our research degrees at both Masters and PhD levels, and this year over 25 PhD's were awarded to researchers from our Faculty.

This year we are also proud to award an honorary doctorate award to one of our past graduates, Mark Cutifani who by virtue of his lifetime of exceptional contributions was awarded a Doctor of Business Administration (Honoris Causa). Mark graduated from the University of Wollongong with a first class honours degree in Mining Engineering in 1982. He is now the Chief Executive of Anglo American, one of the world's largest mining companies with operations in Africa, Asia, Australasia, Europe, North and South America. The company employs more than 100,000 people mining copper, diamonds, iron ore, nickel, platinum and coal. Mark won a number of awards as a student here including the Western Mining Corporation award for the best second year student, one for best final year thesis, and the Atlas Copco Travelling Bursary for 1982, which is awarded to only one student from the whole of Australasia.

Mark has had an international career and has made a huge impact on mining education by setting up programs with institutions in Brazil, South Africa, US and Canada. He has a particular passion for workplace safety, and has made enormous improvements in the safety records of his companies. He has earned widespread respect throughout the mining industry, governments and the international community not only for his business acumen but also for his approach to political and social issues facing communities where mining operations are located. Mark is a marvellous role model for our graduates, and is also a fine illustration of the University of Wollongong's aspiration to be one of the world's best Universities by demonstrating a positive impact internationally on the world's community.

We congratulate Mark on his Doctorate- a fitting reward for such a lifetime of contributions. We also congratulate all our 2013 graduands and wish you all the best for your future careers. Finally, we wish everyone a wonderful Christmas and a Happy New Year for 2014.

EIS Apprentice Achievements

Two of our workshop apprentices have received recognition for outstanding achievements in the Mechanical Engineering Trades area.

Carl Rindlisbacher finished in the top four of the lathe turning category of the regional World Skills Olympics which was held at Wollongong TAFE recently. There were over 25 Fitting and Turning apprentices from the Illawarra region entered in the competition and the top four were separated by less than 8%. The skills and craftsmanship that Carl showed in the production of his competition task was outstanding; no surprise to us because he applies the same high standards to every job he crafts in the EIS workshop.

Sean Ritchie won the Illawarra region Australian Industry Group Apprentice of the Year Award for 2013. Sean was selected from 10 finalists and was presented the award at a formal presentation on Friday night. This is a HUGE achievement due to the rigorous selection process and high standard of entrants that were nominated from across the region, which included apprentices from all trade categories. The Skills set Sean has developed over the short time he has been with us is outstanding and can be seen by the perfection to detail displayed in every project he undertakes for our researchers.

By Ron Marshall

Sean Ritchie receiving his award

Australia's Future Engineers Encouraged to Choose Rail

Six eager engineering students from the University of Wollongong and the University of Western Sydney arrived at AusRAIL PLUS, the biggest rail event in Australia, to 'Meet a Rail Engineer' on 26 November 2013.

'Meet a Rail Engineer' is an industry led initiative developed by the Australasian Railway Association (ARA) whereby engineering students are provided with a unique opportunity to spend quality time with a practicing rail engineer, with the aim to inspire and attract future engineers to rail.

ARA members including Australian Rail Track Corporation, Bombardier, Brookfield Rail, Downer Rail, John Holland, Leighton and Pacific National, volunteered their top rail engineers to mentor and guide the six students at AusRAIL PLUS. Students and Engineers were matched on a one-on-one basis and teams visited exhibitors, answered engineering related questions and highlighted the benefits of applying their skills to the rail industry.

Chief Executive of the ARA Bryan Nye stated that this was the second year the industry body had facilitated the initiative, with the primary focus of positioning rail as an employer of choice. "The Australasian Rail Industry is in a period of significant growth and prosperity, I hope that today these students witnessed that and will consider a career in rail when they graduate," said Mr Nye. It is a wonderful example of industry working together, through the ARA's Rail Workforce Development Committee, providing potential future engineers with a positive "one on one" experience with a Rail Engineer and showcase the exciting career opportunities rail has to offer.

UOW Sponsors World Congress on Railway Research Gala Dinner

UOW was proud to sponsor recently the World Congress on Railway Research Gala Dinner where our logos and banners were well represented and visible at gala dinner, throughout the congress halls and in the foyer to the Ausrail Exhibition. Associate Professor Richard Dwight used this opportunity to speak to a crowd of more than 400 rail specialists from around the world about our Faculty's rail research and education programs for the rail industry.

New Postgraduate Rail Course available: Electrical Traction Engineering

Co-ordinated through the CRC for Rail Innovation, the Electrical Traction Engineering course was developed in partnership with Industry and Academia in response to a need for more rail engineers with specialist knowledge in the area of electrical traction engineering. The Master of Engineering (Electrical Traction Networks) is a new part-time distance education program for engineers moving into or working in the specialist area of electrical traction network engineering. This course aims to accelerate the career development process and produces graduates with the capabilities to practice as valuable members in a broad range of rail organisations. Admission to this course is either through an undergraduate degree or relevant industry experience.

The subjects include learning and assessment tasks, followed by examinations in the following areas:

- Traction Networks Operations, Safety and Standards
- Traction Network Interfaces
- Earthing, Bonding, Electrolysis and Protection
- Traction Power Supply System Design
- Traction Network Planning
- Traction System Realisation and Assets Management
- Traction Contact System Design
- Professional Project in Traction Engineering

Master of Engineering (Electrical Traction Networks) (University of Wollongong)

Contact: Rachel Weine phone: 02 4221 4566 or email: rweine@uow.edu.au

Gifted Students visit SBRC

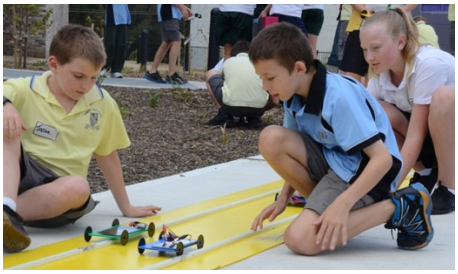
Over 100 academically gifted Year 5 and Year 6 Illawarra students visited the Sustainable Buildings Research Centre on 5th December as part of their interest in sustainability.

The students had a great day and enjoyed various activities. The group toured the Science Centre and Planetarium, and they also constructed solar cars and boats, and raced them.

It is anticipated some of these students will go on to become leaders in sustainability in their school/community or beyond and they were given the opportunity to tour SBRC. Duane Robinson of SBRC officially welcomed the students and showed them the Illawarra Flame House being re-built. There were discussions on what ideas used in the SBRC that the students may be able to utilise in their schools and potential careers in engineering.

Students also had the chance to try delicious organic and sustainable foods provided by the Red Kitchen.

The event was organised Ben Anderson from the Illawarra Environmental Education Centre and it was such a success there are plans to make this an annual event. Many thanks to Duane Robinson, Craig McLauchlan, Daniel Daly, Scott Redwood, Laia Ledo and Yi Guo, Sanja Sreckovic, Julie Curcio and Robyn Fumini.



The Solar Olympian: Lloyd Niccol Retrofitting our way to China and back

Undergraduate Engineering / Commerce student Lloyd Niccol took the stage as part of the 2013 TEDxUWollongong Liveability limelight.

Part of the mix of leading experts to share their vision of tomorrow, Lloyd envisaged the liveable metropolis of the future – one that embraced sustainability with retrofitting. Using the model of the winning Solar Decathlon home, the Illawarra Flame, he made his case for a future built with smaller homes that consume less energy.

The Liveability Lineup from back Left: Rasmus Frisk, Professor Gordan Waitt, Lloyd Niccol, Professor Brian Collins, Professor Ian Buchanan. Front row: Professor Pascal Perez and Dr Sara Adhitya.

UOW Telstra M2M Team

Congratulations to the UOW M2M Team for finishing third in the recent Telstra M2M University Challenge.

The Machine-to-Machine (M2M) is one of the fastest growing areas of telecommunications. It encapsulates technologies that allow virtually any 'thing' to communicate meaningful information – such as locations, measurements, events, etc.

It is a ten-week competition that gives university students a chance to prove they are the next generation of leading Australian innovators.

Winners are judged on their ability to create a M2M solution that will positively impact people and businesses. The developed applications should be commercially sound, focus on software development and be designed to work efficiently on the Telstra NextG® network.

AutOBD or Automated On-Board Diagnostics is the University of Wollongong's M2M system that collects data from a car's on-board diagnostic computer and, via NextG®, sends it to a server – where the data is turned into a report that roadside assistance operators can access.

The UOW M2M Team consists of students in ICT, Design, Business and related disciplines. Congratulations to Jacob Donley (Team Captain), Luke Angove, Renee Cuda, Matthew Dabin, Adam Debono, Mitchell Just, Charles Morgan, Yukin Wu, Shiwei Zhang, and Phillip Ogunbona (Faculty Member).

National Awards for Team UOW

At the recent Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH) National Awards presentation dinner in Brisbane, Team UOW/SBRC students won two prestigious awards:

- Team UOW Solar Decathlon China team, in collaboration with BlueScope Steel, won the Denis Joseph Award for Innovative Use of Solar Energy in Heating Ventilation, Air Conditioning and Refrigeration (HVAC&R);
- Michael Whitehouse was named as the 'AIRAH Student of the Year'.

Massimo Fiorentini, a PhD student at the UOW Sustainable Buildings Research Centre (SBRC) who played a leading role in the development of the 'Team UOW/ BlueScope Solar Assisted Air Conditioning System', accepted the Denis Joseph award on behalf of Team UOW and BlueScope.

The Team UOW/BlueScope Solar Assisted Air Conditioning System was developed by a team of students and staff from the University of Wollongong's Sustainable Buildings Research Centre, in collaboration with BlueScope. Team UOW Developed this unique system to enhance the electrical efficiency of their Photovoltaic (PV) system while also harvesting the thermal energy of the sun. The Illawarra Flame's retrofitted Photovoltaic Thermal (PVT) stem consists of a number of thin-film PV panels mounted on a steel sheet flashing that is fixed to the top of a sheet metal roof profile. This system creates a cavity underneath the steel flashing through which the working fluid, air, can flow and exchange heat with the PV panel.

The system was designed to be a cost effective retrofit solution for existing residential buildings, as demonstrated on the Illawarra Flame House Solar Decathlon house.

SBRC student Michael Whitehouse won the AIRAH Student of the Year Award in recognition of his outstanding work and scholarship in the Heating, Ventilation, Air Conditioning and Refrigeration (HVAC&R) industry.

Michael graduated with a Bachelor of Engineering (Mechatronics) honours degree from UOW in 2007, and went on to develop his skills with Lend Lease as a Specialist Services Engineer. He is now studying a Master of Engineering (Research) on innovative building display systems at UOW's SBRC. Michael's award was in large part recognition for the pivotal role he played as the Building Services Manager of the Team UOW Solar Decathlon team, developing much of the design and documentation of the building services in the first-place winning Illawarra Flame House.

In other news Team UOW and Relativity were one of three finalists in the Art of Engineering awards for their animated walk through the Illawarra Flame House.

Massimo Fiorentini accepting the award

SECTE Innovation Fair

A showcase of new age, technology-driven student products and projects was on display at the Annual SECTE Innovation Fair held in November. The event was held at the Sports Hub and officially opened by Professor Timothy Marchant, Dean of Research.

The objective of this show is to present the ECTE250 and ECTE350 project students to a wider audience. Students were on hand to discuss their projects with staff, high school students and industry partners and advisors during the event.

Some of the projects on display included SWAM (Submersible Water Analysis Machine), the Ultrasonic Washing Machine which has a nozzle manufactured using a 3D printer, the remote fishing line, and the Hazardous Early Warning System.

SECTE Higher Degree Research students and ECTE458 and ECTE953 students presented posters and demonstrations from their specialist areas. The Innovation Fair is a great opportunity to support and promote the work of our students to the University and the wider community. For the full article visit http://media.uow.edu.au/news/UOW160883.html

Dean of Research, Professor Timothy Marchant, inspects the Hyper Engineering Team's electric vehicle charging system

Off The Hook Engineering with their automated fishing rod

UOW High Schools STEM Competitions

The Faculty of Engineering and Information Sciences' High Schools Competitions continue to go from strength to strength.

In 2000, Bob Wheway as a member of the ISRG Committee of Sydney Division of Engineers Australia, organised a pilot Year 11 Engineering Studies Engineering Report Competition for High Schools between Bulli and Kiama. This inaugural Competition had one sponsor (Sydney Division) providing $250 for student awards. Six students from three schools submitted entries in this Competition.

Since then, this inaugural Competition has been progressively expanded. This year, the Faculty ran 13 competitions throughout the whole of NSW and the ACT. The two ACT Competitions are now Science - Technology - Engineering - Mathematics (STEM) while Caz Sandison and Annette Worthy have run inaugural competitions for Years 7 & 8, 9 & 10 and 11 and 12 Maths students. Details of all of the 13 Competitions can be found on the website http://eis.uow.edu.au/highschoolcomp/index.html

This year there were a total of 560 registrations received for the 10 STEM Competitions with over 330 awards presented.

All of the awards were provided by 60 sponsors with a total of $70,000 cash and in-kind sponsorship.

Trade Show and Research Showcase

UOW's School of Computer Science and Software Engineering (SCSSE) and the School of Information Systems and Technology (SISAT) held their annual Trade Show and Research Showcase on 31 October in the University Hall. Senior Deputy Vice-chancellor, Professor John Patterson opened the showcase with Edwin Kwan, a software engineer form Telecommunications Systems giving the keynote speech.

The event, held in the University Hall, showcases the projects third-year Computer Science and Information Systems students to the public and included industry advisors and invited high school students.

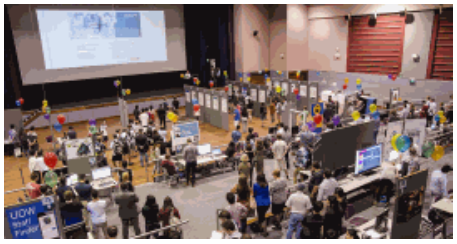
Student teams were on hand to present and discuss their projects throughout the event.

Many of their projects had an industry focus, and students were keen to receive industry comments and feedback. The SCSSE and SISAT Research Centres also presented displays and demonstrations of their research and specialist areas.

SCSSE project displays included the 'Smart Lift', a lift management system in multi-storey buildings, 'SnapIn', a Smartphone application that removes the need for you to remember a password when logging into websites, and 'Viral Flux', a multi-platform strategy war game based on malware.

SISAT project displays included 'Staff Finder', a location-based web app that helps students find the staff and resources they need for their studies, 'Gluphien', client, server and dashboard for a medical call centre, 'Spriii', a system developed for smartphones and tablets that allows salons and other small beauty industry businesses to stay in contact and reward the loyalty of their customers.

For the full article visit : http://media.uow.edu.au/news/UOW160820.html



Facebook Comes to Town

The University of Wollongong in partnership with Facebook recently ran a special event for current and prospective students and alumni who wanted to connect with Facebook recruiters.

UOW network engineer graduate Mr Cooper Lees returned to UOW to share his story. Cooper is now an operations engineer working on Facebook's site reliability, and spoke about how he earned his big break and what it takes to work for the California-based conglomerate that collected US$5.1 billion last year.

Facebook engineering manager Mr Joel Pobar also gave guests an insight into Facebook's fast-moving software engineering culture.

"A few billion likes and a few hundred million photos uploaded a day. A hundred or so petabytes of [questionable] data and a handful of power hungry datacentres. And it's all humming while code is being written and deployed twice daily without users noticing," Mr Pobar said.

Dean of Engineering and Information Sciences at UOW, Professor Chris Cook, said the event was an exciting opportunity for students and recent graduates to get their foot in the door in the world's largest social media company.

"The world is changing fast and we want to make sure our graduates are well aware of and can contribute to the science and technologies which are having such great social and technological impacts. Facebook of course is one of the most powerful and instructive examples of how entrepreneurs and researchers can change the world and we are very pleased indeed to be hosting this visit by Facebook to our University."

Associate Professor Daniel Saffioti, who holds dual roles in the School of Computer Science and Software Engineering and as Deputy Director of UOW's Information Technology Services, said: "This is an excellent opportunity for our talented IT students to get out there and show the world what they can do."

For the full article visit http://media.uow.edu.au/news/UOW163163.html. You can also view the article in the Sydney Morning Herald http://www.smh.com.au/it-pro/expertise/facebook-fishing-for-new-talent-in-wollongong-20131212-hv5go.html

2013 Graduations

The CEO at AngloAmerican, Mark Cutifani, delivered the Occasional Address and received an Honorary Doctor of Business Administration at the Engineering and Information Sciences ceremony on 16 December. He is pictured with the Deputy Chancellor, Dr Stephen Andersen (left) and UOW Vice -Chancellor, Professor Paul Wellings.

Medical Radiation Physics graduates Dr Cheryl Lian and Mitra Safavi-Naeini with Professor Anatoly Rozenfeld

Engineering graduate Dr Stefan Griesser pictured with his father Hubert, who flew out from Austria to attend his son's graduation ceremony.

Innovation Campus Operations and Facilities Manager, Raymond Gunn, was on hand to see his son, Adrian, graduate with a Bachelor of Engineering degree.

Michael Evans gained a Bachelor of Engineering Honours in Mining Engineering.

Anuchit Laohakanniyom (Master of Information and Communication Technology Advanced with Distinction) and Azira Khalil (Master of Medical Radiation Physics)

Lauren Bell graduated with a Bachelor of Medical Radiation Physics Advanced

Tom Borgo (Bachelor of Information Technology) celebrated his graduation with parents John and Leslie Borgo and girlfriend Lauren Ognenovski.

Brothers Cher Hau (Alex) Seng (left) and Kuok Hau (Ivan) Seng both received their PhDs on Wednesday evening – Alex in Electrical

Research Grant Success

Congratulations to all those successful in latest December ARC rounds.

The Total excluding LIEF where UOW is not the lead =$4,484,332 . $900,000 of this is Buddhima's et al LIEF grant which will continue UOW's leading role in Rail Research in Australia and complements their ARC Centre of Excellence. Two grants below include ISEM researchers as well as EIS researchers-the interaction of researchers from EIS and ISEM and IPRI continues to be a very powerful force.

ARC Research Hub for Australian Steel Manufacturing - $12,000,000 research grant success with $5,000,000 from ARC.

Researchers led by Brian Monaghan with many others from our Faculty, others from UOW and many colleagues from BlueScope with some contributions from other industries have combined to be successfully awarded one of the largest ARC competitive industry-linked projects ever.

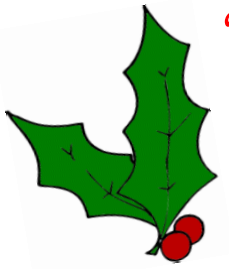
The aim of this Research Hub is to develop breakthrough process and product innovations to enable the Australian steel industry to improve its global competitiveness. Based on an integrated, value chain-wide approach to innovation in the steel sector the Research Hub includes projects on innovation strategy and management, customer-focused product development, innovation in coating and surface engineering technology, and economic and environmental sustainability of iron and steelmaking.

The ARC Centre of Excellence for Electromaterials Science (ACES) led by Centre Executive Director, Prof Gordon Wallace (ARC Laureate Fellow), was awarded $25 million in funding as a new ARC Centre of Excellence from 2014 to 2020. ACES is one of only 12 Centres of Excellence funded nationally and the only successful Centre this round to be led by a NSW university. The funding awarded to ACES represents the largest ever ARC grant awarded to the University of Wollongong.
The new ACES Centre will create important new functional 3D devices including soft robotic limbs and artificial body systems through the discovery of new materials and their assembly into electrochemical devices. The resulting technology breakthroughs will have a direct impact on some of today's most challenging global problems in clean energy, synthetic biosystems, diagnostics and soft robotics. The ARC funding will allow ACES and Australia to take a global leadership position in 3D electromaterials science and to use this knowledge to create new industries.

Academic Promotions

Congratulations to all our successful candidates who were successful in the latest promotions round.

- Dr Lenka Kuzmikova, School of Mechanical, Materials & Mechatronics, - promoted to Level B Fellow
- Dr Nagesh Shukla, SMART Infrastructure Facility, - promoted to Level B Fellow
- Dr Marco Petasecca, Centre for Medical Radiation Physics, - promoted to Level C Senior Fellow
- Dr Tao Yu, School of Civil Mining & Environmental Engineering, - promoted to Level C Senior Lecturer
- Dr Zhenjun Ma, Sustainable Buildings Research Centre, - promoted to Level C Senior Lecturer
- Dr Susanna Guatelli, School of Physics, - promoted to Level C Senior Lecturer
- Dr Man Ho Allen Au, School of Computer Science & Software Engineering, - promoted to Level B Lecturer
- Dr Marianito Rodrigo, School of Mathematics and Applied Statistics, - promoted to Level C Senior Lecturer
- Dr Luping Zhou, School of Electrical, Computer & Telecommunications Engineering, - promoted to Level C Senior Fellow



The Faculty of Engineering and Information Sciences wishes you and your Family a very Merry Christmas, and a Happy, Safe & Prosperous New Year!

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