

InFoST

In this issue:

- Awards
- Staffing Changes
- HEPPP Funding Grants Success
- Antarctic expedition unites Ballarat women of science
- FedUni researcher presents to Senate Select Committee
- FedUni researchers get best paper award
- Elephants, Graphite and food no spicy
- Hebei University and FedUni announce joint institute
- FedUni researchers lead mine safety project
- IT Discipline Report
- Staff Reign Supreme!
- Teachers at Nanya
- New spaces for new ways of teaching
- Theory and Practice of Restoration and Rehabilitation Conference
- Students present work to Industry Group
- CIAO News



A Message from the Executive Dean

Another InFoST which features articles detailing the activities of Faculty staff across a broad range of topics. The reach and impact of the Faculty is clear from this collection and I congratulate all those involved.

I would also like to welcome our new staff in Gopi, Greg, Taiwo, Sunil and Amy with Leigh coming back to help out again. We are always very pleased to welcome new staff as they not only reinvigorate our teaching and research but also add new faces and experiences to all our activities.

2016 looks like being another challenging year with the pace of change not slowing but perhaps refocusing more to our research agenda and to consolidating the changes we have made in our courses and programs. The new DVC(R&I) Leigh Sullivan has now outlined the new direction in priority research areas and I trust all staff are assessing their opportunities under the new model. FoST would expect a majority of the RPAs given our research profile and recent ERA successes, but we should also consider where future areas of research growth can be fostered. The Faculty's own thematic program is designed to foster new areas of research and support a broader range of researchers and we will work to ensure that both models are supported and encouraged from Faculty and University resources.

The Faculty has also been working to ensure our administrative needs are recognised within the SAT process and we have made significant representations at all levels of this process. The next few weeks we will see the results but we have been assured that the proposed internal Faculty team will be able to meet the needs of our staff and students. As one who has been through similar changes many times at different Universities I can assure all that once complete the new processes and teams have a very good chance of settling down to produce workable solutions. The main requirement is that we all get to know the people involved and their roles and responsibilities.

Finally let me thank all who have helped me over the last year to settle into this position. It is clearly a challenge to take over a Dean's role at any time and especially since we had just formed the Faculty and are completing the merger between Mt Helen and Gippsland. It has been a very interesting journey. The Executive of the Faculty has been thrust into new situations and roles and has performed at a level which has been noticed across the University and beyond. We have been supported by discipline leaders and co-ordinators and all staff both on campus and in our partners, who have committed to developing new programs and courses, teaching via new methodologies and building research outputs. All this is obvious in our rapidly developing reputation both within and outside the University.

Thank you,

Mark

Professor Mark Sandeman, Executive Dean, Faculty of Science and Technology

You can submit your article to InFoST by emailing the Editor, Andrea Davies at fost.operations@federation.edu.au. All articles, profiles and reports are welcome.

Back issues of this newsletter can be found on the Faculty of Science and Technology website.

Awards

Congratulations to PhD student and staff member, **Sasha Ivkovic** on the recent completion of his PhD.

On Monday 16 November 2015, the national finals of the "5 Minute Research Pitch" (5RP) competition for academic staff were held at Australian Catholic University, Sydney.

Congratulations to **Dr Morgan Wallace** who was awarded 2nd place in her discipline grouping.

Congratulations to **Divya Eratte** on placing first in the Quality Assurance Division Virtual Student Research Paper Oral Competition held 17 November 2015. Well done Divya!

Dr Brian Chapman, Honorary Principal Research Fellow, School of Applied and Biomedical Sciences (SABS) has received accolades at the highest international level, with a research paper "*Thermodynamics and kinetics of the FoF1-ATPase: Application of the Probability Isotherm*" having been accepted as a peer-reviewed publication in Royal Society Open Science. This research began as a collaborative project with two other SABS academics, **Jennifer Mosse** and **Jo-ann Larkins**, who investigated pedagogical errors in bioenergetics occurring in the major textbooks of biochemistry over the past forty years and continuing to the present day. An international collaboration with Associate Professor Denis Loiselle of the University of Auckland allowed Brian to apply this ground-breaking pedagogical work to the contemporary research scene. Brian has been invited to share his work with academic colleagues in China through seminars at the Soochow University and Xi'an Jiaotong-Liverpool University, also in Soochow (Suzhou).

Staffing Changes

Indra Gunawan

Dr Indra Gunawan has left the University to take up a position at the University of Adelaide. Indra has been a quiet achiever for both FedUni and Monash and has led our very successful Maintenance and Reliability Engineering programs for the last 5 years. Indra's contributions have been much appreciated and we wish Indra and his family all the very best for the future

Belinda Wallesz

Belinda, our Coordinator Faculty Operations, has left the Faculty of Science and Technology to take up the role of Manager, TAFE Financial Operations in Finance. During her time as Coordinator Belinda was closely involved with the development of the Faculty's budget, forecasting, office moves, she developed innumerable position descriptions, shepherded new positions through HR and Finance, and has been an indispensable part of our Faculty. We wish her well in her new position.

Greg Davis

As of February 2016, we welcomed Greg Davis, Lecturer, Biochemistry to the School of Applied and Biomedical Sciences, Gippsland Campus. Greg was an off-campus undergraduate student here quite some time ago (Biochemistry), and has fond memories of block labs for most

of his units, so for Greg the Gippsland Campus is a familiar and comfortable environment.

After graduating, Greg worked in the scientific industry in a variety of disciplines, ranging from pharmaceutical chemistry, food microbiology, and pathology. He developed an interest in research and later completed both a Masters degree and a PhD in Peter Boag's lab at Monash University in the Department of Biochemistry and Molecular Biology, where he investigated how small non-coding RNAs influence stem cell proliferation and chromosomal segregation. Greg stayed at Monash and undertook a Post-Doctoral position in Roger Pocock's lab in the Department of Anatomy and Developmental Biology where he focused on how microRNAs influence motor neuron development and function. Greg's research uses the model organism *Caenorhabditis elegans* (AKA 'the worm') to address fundamental questions associated with gene expression at the post transcriptional level. Greg uses a combination of cell biology, biochemistry and molecular biology in his research and hope to collaborate with staff here that share similar interests.

Taiwo Oseni

Taiwo Oseni commenced in January as Lecturer, Enterprise Systems in the School of Engineering and Information Technology. Taiwo is in the final stages of completing her PhD in Information Systems at Monash University and brings both academic and industry experience to the role, including expertise in SAP.

Amy Meade

Amy Meade has joined the School of Engineering and IT as Scholarly Teaching Fellow, Information Technology. Amy has previously been working with us as a sessional staff member whilst completing postgrad studies and we now welcome her as a full time staff member.

Sunil Aryal

Sunil Aryal commenced in January with the School of Engineering and IT as an IT Lecturer. Sunil is in the final stages of his PhD with Monash University and has amassed an impressive research track record. He also has experience teaching with both Monash and with our courses through ATMC. In addition, Sunil brings valuable experience in industry to the position.

Leigh Achterbosch

Dr Leigh Achterbosch has also commenced in a full time role as Lecturer, Information Technology. Leigh is a PhD graduate and long term sessional staff member of the School and he has taken a fixed term position covering staff long service leave. Leigh will be based at Mt Helen campus.

Gopi Chattopadhyay

We welcome Dr Gopi Chattopadhyay who will take on coordination and teaching in the maintenance and reliability engineering degree. Gopi is also a member of the Asset Management Council and has an extensive experience in setting up and managing maintenance and reliability programs. Gopi will be based at the Gippsland campus.

HEPPP Funding Grants success

SABS staff have been awarded \$130,000 to support low SES students across Ballarat and Gippsland. Congratulations to **Chris Turville** and **Andrew Percy** on their successful application to continue operation of the Math/Stats Drop-in Centre. Congratulations also to **Jenny Canovan** and **Jennifer Mosse**, who applied for funding to support the Gippsland Access and Participation (GAP) project and to extend GAP activities to Ballarat in 2016

Antarctic expedition unites Ballarat women of science

Two of western Victoria's leading female climate action advocates will be sailing for Antarctica later this year.

Federation University Australia's **Dr Jessica Reeves** and EarthEd's **Colleen Filippa** will join 76 other leaders in science from around the world on the three-week expedition.

A documentary film crew will accompany the expedition while the expedition scientists work on a range of issues focussed on female leadership in science, the impacts of climate change and community participation in climate action.



Dr Jessica Reeves is a Lecturer in Environmental Science at Federation University Australia's Mt Helen Campus.

Her research expertise is in using lake-bed sediments to interpret long-term climate and environmental change.

Colleen Filippa teaches climate science at Mt Clear's specialist science centre Earth Ed and writes science curriculum materials for schools. She is a district leader in Al Gore's Climate Reality Program.

The expedition will depart from Ushuaia, Tierra del Fuego at the southern-most tip of South America and travel through the Drake Passage.

In Antarctica the team will visit scientific bases, old whaling stations and travel as far south as weather, ocean currents and the ice will permit.

"My team will be looking at how to combine our traditional scientific understanding of climate change with social science research to bring about increased community action," Dr Reeves said.

"Women should have a key voice in climate change policy, research and of course, action."

Colleen Filippa said her group will have more of an education focus.

"We want to explore strategies for becoming more effective at bringing awareness to the community about climate change and the need to take real action," Colleen said.

The Homeward Bound Project and Antarctic Expedition is the brainchild of Australian leadership expert Fabian Dattner, and Dr Jess Melbourne-Thomas from the Antarctic Climate and Ecosystems Cooperative Research Centre in Tasmania.

The 78 female leaders in science have been selected from Australia, Canada, France, Germany, UK, US, Norway, New Zealand and South Africa.

More information can be found at <http://homewardboundprojects.com.au> or on Facebook at <https://www.facebook.com/groups/1517727821824110/>

FedUni researcher presents to Senate Select Committee

Peter Gell, a Professorial Research Fellow at Federation University Australia, presented to the Senate Select Committee on the Murray Darling Basin Plan in Goolwa, South Australia, recently.

He provided a brief summary on the research he has conducted for 20 years on long term change in the aquatic systems of the Basin, including the significant Coorong lagoon.

The Select Committee is investigating the impact of the allocation of Basin water for environmental flows on the regional communities, particularly the irrigation based industries that rely so heavily on access to water supplies.

"Given the pressures on regional communities it is critical that we ensure the best environmental benefit for the investment in environmental water," Professor Gell said.

"Our evidence of long term change in the Basin's wetlands shows that the quality of the water has declined, and so a risk exists in that the release of water to aquatic systems may not have the same benefit as if the water was of higher quality.

"Given the significant investment in redeeming water for the environment under the Basin Plan, and the potentially high cost to water users from reduced allocations, we need to



ensure the best environmental bounce from each water release.

"It may pay to direct some of the investment onto measures to improve water quality, rather than focussing so heavily on water volume

FedUni researchers get best paper award

Researchers from the School of Engineering and IT, Faculty of Science and Technology including **Assoc ProfmJoarder Kamruzzaman, Dr Gour Karmaker** and **Assoc Prof Iqbal Gondal (Director of ICSSL)**, along with their PhD student **Shahriar Kaisar** from Monash University, have won the best paper award for their paper titled "Content Exchange Among Mobile Tourists Using Users' Interest and Place-centric Activities" at the 10th International Conference on Information, Communications and Signal Processing (ICIC) held in Singapore. Their paper won the award among 250 papers which were selected for publication at this prestigious conference.

Achievement of this award points to the high quality research undertaken by the researchers from Federation University Australia.

Shahriar Kaisar says that "he is very happy and delighted to receive such an award which is an acknowledgement of our contribution to the research community, and will certainly encourage our future works".

Assoc Prof Joarder Kamruzzaman believes "Our work will help tourists to share content using smart devices at tourist attraction spots and will reduce internet traffic; we are also planning to collaborate with Tourism Research Australia (TRA) to perform trials at different tourist attraction spots of Victoria to see how our approach would emulate the real life scenarios."

Dr Gour Karmaker says "This study employed trustworthy recommendation extraction from online social networks which can be incorporated in future studies requiring extraction of meaningful information from social networks."

Assoc Prof Iqbal Gondal highlighted that "This is a great achievement and good encouragement especially for the student; hopefully we will continue our good work, collaboration with industry and be able to receive many more such awards."

Elephants, Graphite and food no spicy

Mick Tuck

Assoc Prof Mick Tuck has been on his travels yet again, this time to Sri Lanka. Mick was invited by the University of Moratuwa to act as an international expert to assist the Department of Earth Resources Engineering in their application for accreditation by The Institution of Engineers Sri Lanka. Mick was in Sri Lanka during the period 15 to 19 February 2016 and enjoyed the tropical heat.

The Department of Earth Resources Engineering is one of many Engineering departments making up the faculty of

Engineering at what is Sri Lanka's premier University. Like our campuses building works are continuing apace at the main University campus near Colombo. The annual intake of students is currently 50 into the 4-year Bachelor of Engineering program.

The Institute of Engineers Sri Lanka recently adopted an accreditation model based very strongly on the one used by the Institution of Engineers Australia, which at least simplified things. The main elements within the program are very similar to Mining Engineering degrees elsewhere and it was simple to benchmark the program against mining programs offered here in Australia. There are some differences, one of the major ones is the organised work experience placement occurring over a full semester, and fortunately the department gets considerable assistance with this from the faculty and University. Students can also elect to undertake additional studies as part of their program to also graduate with a minor in either Ocean Resources Engineering, Gems and Jewellery, Remote sensing and Geographical Information systems or Petroleum Engineering.

As well as visiting the main University campus and inspecting facilities there, Mick also had a day visit to the Bongala Graphite mine some 80 km from Colombo (a 4-hour drive). Bongala is an interesting mine, owned by a German company and selling high grade graphite to countries all over the world. It uses a mining technique known as cut and fill to extract graphite from the narrow orebodies. One of the reasons for visiting the mine was to meet up with students undertaking their industrial training at the mine and to get a student perspective of the Department. Mick had previously met with second and final year students at the main campus.



On the drive back from the mine a small detour was made to an Elephant sanctuary allowing Mick to get up close with some elephants including the mother and calf shown in the photograph.

Sri Lanka is a wonderful country, lots of new investment coming into the country now and it is well worth a visit. I would not advise driving, the roads are interesting to travel on, and tuk tuk's are everywhere. The food is also very interesting, if you do not enjoy spicy food just remember to say no spicy and you should be okay.

At the end of the whole process Mick returned to Australia and wrote up a report for the Institute of Engineers Sri Lanka

and the University as an independent expert. I hope the department achieves accreditation.

Hebei University and FedUni announce joint Institute

Hebei University of Science and Technology (HUST) and Federation University Australia have announced plans to establish a joint education institute in Shijiazhuang, China.

The new collaboration, which will be named the HUST-FedUni International Institute, will be able to deliver four joint programs in information technology in the near future.

The agreement between FedUni and HUST to establish the institute will be signed by **Professor Todd Walker**, Deputy Vice-Chancellor (Engagement) of FedUni and **Professor Hexu Sun**, President of HUST, during the Australia Week in China later this week.

"Federation University Australia is extremely honoured to partner with Hebei University of Science and Technology in this new institute," **Professor Walker** said.



"We have been discussing this for development for many months and signing the agreement allows us to combine our strengths in the delivery of leading information technology programs at the institute."

The two universities already have a government-approved joint Bachelor program in Environmental Science in place.

Students will have opportunity to study part of their Bachelor programs in FedUni campuses in Ballarat or Gippsland to experience typical Australian study and living environment in regional cities.

The Faculty of Science and Technology at Federation University Australia provides world leading research and higher education in the broad area of information technology.

In the recent Excellence in Research Australia (ERA) 2015 assessment carried out by Australian government, Image Processing and Artificial Intelligence research group at FedUni was ranked ERA 4 (above world standard) and equal second highest in Australia.

The application for the new joint institute is subject to the approval of the Chinese Ministry of Education.

FedUni researchers lead mine safety project

Researchers from Federation University Australia are due to play a significant role in the Victorian Government's \$2.2 million Batter Stability project at Energy Australia's Yallourn Mine in Gippsland.

Researchers from the University's Geotechnical and Hydrogeological Engineering Research Group (GHERG) will carry out the five-year project in conjunction with Energy Australia at the Yallourn Mine site with technical support from the Victorian mining regulator, Earth Resources Regulation.

"Field work will start immediately, with the project due to be finished by June 2020," **Professor Rae Mackay**, Associate Dean of Research, said.

"This project involves geotechnical and hydrogeological studies of mine batters.

"It stems out of recommendations by Victoria's independent Mining Technical Review Board to study the risk factors that affect batter stability in mines and to make them safer," **Professor Mackay** said.

"The findings will be used across all of Victoria's open pit coal mines to help prevent major accidents, such as wall collapses, and ensure mine rehabilitation is safe and stable into the future."

For further details contact **Professor Rae Mackay**, Director GHERG, extn 26191

IT Discipline Report

Richard Dazeley

The IT Discipline has had a very busy time over the last year. The discipline has had very strong student numbers, been designing innovative new curriculum and teaching approaches while leading the University in research.

Curriculum

After a year of curriculum design and development the Discipline is at the exciting stage of releasing and rolling out an entirely new undergraduate suite of offerings. Last year the School started a process to review our undergraduate programs. The outcome of this review was a redevelopment of our undergraduate programs from the ground up.

The new program represents an innovative new approach to IT curriculum, utilising the latest thinking on how to approach the teaching of IT. The program uses a problem and design thinking based approach to learning, where advanced concepts are taught in the context of how they are used in the real world.

No longer will first year students study individual courses on programming, databases etc. Instead they will learn these technical skills as part of learning about the various practices and processes used in different IT based industry. In this way students become contextually aware of why the skills are needed in different domains.

This context based approach is then further enhanced by a work integrated learning component that threads throughout the whole program of study. From first semester first year students participate in engagement activities with industry.

This engagement allows students to see how their studies relates to the IT solutions developed for a range of industry and research problems.

Finally, the new program introduces a suite of specialist streams of study from which students can select. These streams are Big Data and Analytics, Networking and Security, Cloud and Enterprise Computing, Business Information Systems, as well as three streams in development: Software, Games and Mobile. During their first year students study an introduction to all streams giving them a strong foundation in each. This allows them to then select the stream of greatest interest for their second and third years of study and allows for easier switching of streams later in their program.

The new undergraduate programs will start being taught in 2017.

Teaching

This year many staff have enjoyed the freedom they have been provided in being able to explore innovative approaches to teaching. We have seen staff introduce and experiment with new technologies and teaching pedagogies more rapidly than ever before. Many staff have enjoyed the creative process of finding new ways to present their material, with students also enjoying the new approach.

For instance, we have many staff developing innovative and engaging videos, ebooks, forum discussions, quizzes with embedded support, etc. With all the additional online material many staff have been introducing new active class room activities. Some have reported how they have used more flipped class room approaches, open discussions, group discussion, Socrative or Moodle quizzes in the class room etc.

With the roll out of our new undergraduate curriculum there is a great opportunity to develop even more innovative approaches to teaching. Staff are drawing up plans to focus more on problem and design thinking based teaching pedagogies. This is an exciting time for staff as they are no longer bound by legacy approaches and can develop integrated curriculum and pedagogies across a whole program.

Research

The 2015 ERA results placed the IT Discipline's research into Artificial Intelligence and Image Processing (0801) as above world class (4). This results places one of our primary areas of research as equal second highest ranking in Australia, just behind the Australian National University and the equal top research performers in the University. This was a great outcome for our researchers after many years of strong research outputs.

This year the IT Discipline continues to get on with producing great research outputs. With researchers across the School continuing to collaborate and publish with researchers and industries around the world. The aim this year is to build on the hard earned ERA result to achieve more research income from grant bodies and industry and to continue to improve our standing.

Staff reign supreme!

Julie Howes

What a fantastic 'check in week' activity our Game On turned out to be! Overall, the staff had a resounding win over the students, so go us!

At the Mt Helen campus, the airport lounge became a hive of activity, noise and laughter! It was so good to see our staff getting into the spirit and playing games such as chess, quots and even hopscotch! I know the students really enjoyed the experience,

commenting on how they didn't think this staff member would do that, or how funny is that staff member. At our Gippsland campus it was well embraced and facilitated by both staff and students, despite the physical environment not lending itself to the activity as well as at Mt Helen. I think this really went a good way in establishing those staff/student relationships from the get-go, so thank you to all who really got into the spirit!

If you have any feedback on Check In Week – what could improve the current initiative next time around, recommendations on better places to house this, alternate games etc, or even suggestions for a new Faculty initiative/approach to Check in week, please send them to Jewls via j.howes@federation.edu.au



Teachers at Nanya

“Can I stay?”

“That was the best Professional Development I’ve done for a long time”

So said two teachers who recently accompanied FoST Arid zone Ecologists **Emeritus Prof. Martin Westbrooke** and **Assoc. Prof. Singarayer Florentine** for a seven day experience at the university’s research station at Nanya in far western NSW.

The ten teachers, mostly of secondary school Environmental or Biological sciences, spent a week of the recent school holidays, refreshing their ecological skills. A variety of flora and fauna survey techniques were used to collect data contributing to research in long-term studies exploring fire regimes, grazing pressure and ecosystem regeneration.

Nanya, located 140km southwest of Broken Hill, is of high conservation significance, containing some of the best examples of Mallee and arid woodland ecosystems in NSW, along with a saltlake complex of national significance. After a long association with the property since the mid 1970’s when our Environmental Management students were first taken to Nanya to learn ecological field techniques, Fed Uni purchased Nanya in 2004 for education, research and conservation.



Enroute to one of Nanya’s extensive saltlakes.

Prof. Westbrooke said: “Nanya is a very special place – its environmental and educational value is exceptional as it is part of one of the most intact ecosystems in an otherwise highly modified landscape. We have many long-term research projects underway at Nanya. We’re examining the long term effect of closing or removing artificial water sources on populations of feral and indigenous animals and the recovery of vegetation with the consequent reduced grazing pressure. Trials are also being conducted into recruitment and survival of overstorey tree species within arid woodland and the habitat values of long unburnt mallee, a critical resource for many endangered fauna. The implications of our research are applicable to rangeland and conservation reserve management both in Australia and overseas. Our visitors helped gather data which will be used in a number of these studies.”



Briefly distracted by a Striped Honeyeater, a Field Team takes a break from checking pitfall traps.

Assoc. Prof. Florentine said: “We had a very productive and interesting week – it’s a pleasure to host such an interested group of volunteers. I’d like to thank long-term associates **Barry Kentish**, and **Peter and Jenny Sedgwick** who loaned their expertise to help lead the field teams. Teams were up before dawn each day to check pitfall traps and then spent afternoons on a variety of tasks including monitoring regeneration of vegetation in exclusion plots, removing old fences to facilitate wildlife movement and planting indigenous trees and shrubs in revegetation sites. As usual, Nanya’s night-time skies didn’t disappoint and there was much amateur late-evening astronomy to finish the day.”

Expedition organiser, **Stephanie Davison** said: “Inviting teachers to participate in field work at Nanya is valuable to everyone. Teachers gain knowledge of the local flora and fauna, ecological techniques and the purpose and applications of our research – all of which they can take back to their students. Our researchers have access to a team of enthusiastic and motivated assistants to help collect a large amount of data in a relatively short time.”

Whilst Fed Uni researchers visit Nanya numerous times a year to conduct long-term investigations, this is only the third time we have invited teachers to join us. Feedback shows they find it to be a great personal experience, wonderful professional development and very rewarding to make a genuine contribution to research.

Not a mouse but *Ningui yvonneae* – a marsupial from Nanya



New spaces for new ways of teaching

Barbie Panther

A new collaborative learning space has been installed at the Gippsland campus which is changing the way we teach mathematics and science classes. The space has a mix of high-tech and low-tech collaborative tools which enable students to work in small groups on problem solving. The room has been fitted out with a number of writeable surfaces and large internet enabled touch screens. Students can work together on the whiteboards and can use their own devices to share content with the rest of the class. The screens use wireless technology to allow any device in the room to project onto the screens, individually or around the whole room. This innovative learning space has allowed our lecturers to develop new ways of implementing student-centred learning in their classes. **Jo-ann Larkins**, lecturer in statistics, says the room allows her to facilitate and guide student self-discovery of statistical concepts. "Students share experience, come to a consensus and articulate their understanding of the material in a nurturing environment. This space opens up new ways of teaching and learning".



Theory and Practice of Restoration and Rehabilitation Conference 2016

Singarayer Florentine

A three day workshop was held on the Theory and Practice of Restoration and Rehabilitation in Y Building, Mt Helen Campus on the 15-17 February 2016.

Keynote speakers were **Dr Andre Clewell**, Florida State University, USA; **Dr Linda Broadhurst**, Director of the Australian national Herbarium and Group Leader of **Botanical Research for CSIRO** Natinal Research, **Dr Tien McDonald**, Society for Ecological Restoration Australasia (SERA) and Mr Richard MacEwan, Senior Research Scientist – soils, Agriculture & Rural, Dept. of Economic Development, Jobs, Transport & Resources.

The Conference participants attended lectures and a training session on the National Standards for the Practice of Ecological Restoration and visited a number of local restoration and rehabilitation sites around the Ballarat area.

40 attendees included people from Government departments both Victorian and Interstate, Catchment Management Authorities, Lancare and a range of other organisations and consultants working in this area.

The Faculty acknowledges sponsorship support from Suregro and the Wimmera Catchment Management Authority for the conference.



Conference participants (some missing) who attended the Conference

Students present work to industry group

Kathleen Keogh

On the 27th April 2016, the Faculty IT Industry Liaison group met. This is a regular bi-monthly meeting involving partners from local IT industry with university academics from the faculty. On the agenda for the April meeting was a presentation by two students involved in the BIT (Professional Practice) program, **Hayley** and **Joey**. Hayley is currently beginning her 4th and final year in the program. Joey has completed her study and is about to graduate in May 2016. As part of their paid work experience with IBM, Hayley and Joey have been involved in a community based partnership project with IBM. Mentored by IBM staff, the students designed and implemented a patient management system to be delivered to the Ballarat Hospice. Hayley is now project managing the project which is planned for release later this year. All students in the BIT (Prof Prac) program graduate with at least one year's worth of work experience with IBM that they gain during the final 3 years of the program.

During their presentation, students gave a demonstration of their system and also discussion was held regarding their experiences. It was of great interest for industry partners to hear first-hand of the students' experiences learning 'on the job' at IBM whilst studying. **Karen Taylor**, from the Ballarat Hospice was also in attendance and spoke of how appreciative they were at the Hospice for the support they are receiving from the project and partnership with IBM and Federation University.



Centre for Informatics and Applied Optimization (CIAO)

Alex Kruger, Research Director, CIAO

CIAO Showcase and 15th Birthday celebrations

The Centre of Informatics and Applied Optimization has been a Research Centre at the University for fifteen years – a wonderful achievement with much research occurring during this time.



Prof Leigh Sullivan, DVC R & I & A/Prof Alex Kruger, Director, CIAO

The special occasion was marked with a CIAO Showcase and Workshop held at the Mt Helen Campus on the 6 April 2016.

CIAO researchers presented their research throughout the day and Prof Leigh Sullivan, DVC Research & Innovation launched the CIAO Showcase in the Airport Lounge and acknowledged the significant amount of research that had occurred through CIAO.

A/Prof Alex Kruger spoke about the legacy of CIAO researchers and in particular the inaugural CIAO Director, Prof Alex Rubinov who established CIAO. Quite a number of Alex's ex PhD students attended and have gone on to have successful research careers.

The Centre for Informatics and Applied Optimization was formally established as a Designated Research Centre of the then University of Ballarat by the University Council on 22 June 2001.

Professor Alex Rubinov founded the new Centre and was a dynamic leader, establishing CIAO's reputation as an internationally recognised research centre in optimization. Prof. Rubinov led CIAO until his untimely death in 2006.

Since then, CIAO's work has continued with a number of Directors including Prof John Yearwood, A/Prof David Yost,

A/Prof Andrew Stranieri, with the current Director A/Prof Alex Kruger.

CIAO currently has 38 members, who work in mathematics, information technology, engineering, metallurgy and climate.

CIAO actively collaborates in more than 20 countries across Europe, Asia, North and South America.

CIAO has had an exciting 15 years and we look forward to the future.



CIAO researchers at the Showcase

CIAO gets involved in inaugural MATRIX programs

Congratulations to Centre for Informatics and Applied Optimization (CIAO) researchers Assoc Prof Alex Kruger and Dr Julien Ugon on successfully applying to organise a ten day intensive research program bringing together researchers in optimization and approximation from across Australia and internationally in the framework of the newly established **MATRIX@Melbourne** research institute in the mathematical sciences.

The institute is supported by the University of Melbourne ARC Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS) and will host advanced level, research-intensive programs in the mathematical sciences. The first programs start in June 2016.

The CIAO application is part of a FedUni collaboration with RMIT and Swinburne Universities and University of Chile.

CIAO Researcher wins Telematics Trust Grant

Congratulations to Centre for Informatics and Applied Optimization (CIAO) researcher, Grant Meredith on his successful application for a Telematics Trust Grant of \$25,497 for the project: "Scenari-Kids: Empowering the Future". This project is an extension of the successful Scenari-Aid project which has been rolled out globally. Scenari-Kids will develop an online social simulation tool to help children with speech difficulties and social anxieties to become more confident with their social interactions.

CIAO Researcher presents at the Adaptive Learning Agents Workshop (ALA) 2016

Associate Professor Peter Vamplew has been announced as the invited speaker for the Adaptive Learning Agents Workshop (ALA) 2016 which will be held on the 9 & 10 May 2016 in Singapore. ALA encompasses diverse fields such as Computer Science, Software Engineering, Biology, as well as Cognitive and Social Sciences. The ALA workshop will focus on all aspects of adaptive and learning agents and multiagent systems with a particular emphasis on how to modify established learning techniques and/or create new learning paradigms to address the many challenges presented by complex real-world problems.

Peter Vamplew is an Associate Professor in Information Technology at Federation University Australia, and co-leader of the Federation Learning Agents Group of the **Centre for Informatics and Applied Optimization (CIAO)**. Over the last decade he has been one of the leading researchers driving the emergence of Multiobjective Reinforcement Learning (MORL) as a distinct and important sub-area of reinforcement learning research.

Multiobjective reinforcement learning is an emerging area of research, aimed at extending reinforcement learning methods to address tasks with multiple objectives. Peter's presentation will provide an overview of MORL, starting from a definition of the formalisms underpinning MORL, and using three general scenarios to illustrate situations where scalar reinforcement learning methods may not be applicable. In particular, the task of developing ethically-constrained intelligent agents will be considered as a driving case for the development of MORL methods.

More information is available at <http://ala2016.csc.liv.ac.uk/#speakers>

NICTA/Data 61 Summer Scholarship 2015 Research Program.

Faculty of Science and Technology student **Melanie King** took part in the **NICTA/Data 61 Summer Scholarship 2015 Research Program**. Her project titled "*Applying Authorship Profiling to Identify Online Sexual Predators*" was supervised by A/Prof Peter Vamplew and Dr Rosemary Torney from the **Centre for Informatics and Applied Optimization** and Dr Manuel Cebrian from NICTA/Data 61.

As part of the program, all students presented their projects and findings and the top 3 presentations were selected and honoured with prizes. Melanie was successful in getting into this group. She received an award certificate and \$100 gift voucher. Her presentation is available at <https://www.youtube.com/watch?v=zwKbzUdltQs&feature=youtu.be>

Melanie said "I was just as proud for FedUni today as I was for myself, as most of the students were from schools like Monash, RMIT and Swinburne which are better known. Given that a number of the students were Masters students, I was really chuffed to have produced work of a competitive standard to them and I attribute much of that to

the effort that Peter, Manuel and Rosemary put into guiding me in the right direction"



Presenters at the NICTA/Data 61 Summer Scholarship 2015 Research Program – Melanie King is 5th from left

ICSL working with Telstra on AMSI Internship

The **Internet Commerce Security Laboratory (ICSL)** is undertaking an AMSI Internship with Telstra on a project titled "*Data driven analysis of SS7/MAP Signalling traffic*". PhD student **Muhammad Amar** and his mentor, ICSL Director, **A/Prof. Iqbal Gondal** will be working on the project over four months.

Mobile telecommunications networks are inter-connected both domestically and internationally with other network operators to provide both the delivery of services such as text messages and to allow for international roaming. These are transported over SS7 and Mobile Application Part protocols.

Telstra is seeking to gain a greater insight into the signaling traffic on these networks and wish to take more of a "big data/analytics" approach to this. The research to be undertaken includes the intern undertaking analysis of SS7/MAP traffic by building data structures to analyse the data across a longer period of time.

This project follows on from another successful AMSI Internship with Telstra and an ICSL PhD student in 2015, Ahmad Azab. AMSI Internships provide PhD students with valuable "real work" experience whilst supported by their academic mentor.

International Visitors to CIAO

CIAO has had a number of visitors during 2016 including:

Dr Napsu Karmitsa, Turku University, Finland, Dr Wei Deng, Shanghai Maritime University, China; Prof Assen Dontchev, American Mathematical Society USA, Dr Zhaohou Sun, The PNG University of Technology, Papua New Guinea; Prof Jean Pierre-Crouziex, Universite Blaise Pascal, France, Ms Kaisa Joki, Turku University, Finland, Prof Fusheng Bai & Prof Zhiyou Wu, Chongqing Normal University, China; Mr Miiika Karmitsa, Finland, Prof Zong Ping Zhu, University of Woollongong.