

SCHOOL OF ENGINEERING NEWS Issue 2 2011

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HoS Foreword

This Autumn semester has been full of significant activity and excellence for the School and Civionics Research Centre.

Collaborating researchers, Dr Helen M Goldsworthy, Prof Emad Gad, Prof Brian Uy (UWS), and Dr Saman Fernando and organisations AJAX Engineered Fasteners and OneSteel Ltd have been awarded \$255k to develop efficient, robust and architecturally-flexible structural systems using innovative blind-bolted connections. The project is to develop structural systems that have sufficient stiffness, strength, and ductility to withstand code-specified loads and that will be competitive in the marketplace. The development of demonstrable cost-effective structural systems is essential if these types of systems are to be widely adopted in practice, thus allowing Australian manufacturers of blind bolts and steel tubes to achieve a greater market share.

The School of Engineering continues to graduate successful and esteemed alumni. At the April ceremony, first class honours were awarded to five

of our graduates, Benjamin Basso, Jeremy Harrington, William Croft, Manuel Demertijs and Steve Krezo who graduated in Civil Engineering and Construction Management. Two of our current academic staff graduated with PhD's, congratulations to Dr Sasha Alexander and Dr Ee Loon Tan.

In June, the newly established Bachelor of Engineering (Construction) program received provisional accreditation from Engineers Australia. This program is unique to UWS and offers graduates the opportunity to gain qualifications to work in both civil engineering and construction management roles.

The annual Research Futures Forum for higher degree research students within the College of Health and Science was held on June 10 showcasing the research activities of our students. Congratulations to our School of Engineering winner Sumudu Wijetunge, and runners up Dona Shashika Biyanwilage and Prasana Herath and our

Civionics winner Brendan Kirkland and runner up Ravinthera Nishanthan. The honours poster competition was held at the same event and the overall College prize and runner up prize was awarded to School of Engineering honours students, Zhenya Kremyshev and Mitchell Dumesny so congratulations to those students as well for an outstanding effort.

The School continues to support community engagement with industry and was a major sponsor of the NSW Manufacturers Leaders Forum held in May. The event attracted over 250 visitors and was a successful networking opportunity for our staff to meet local industry representatives.

Several of our staff have been in the media spotlight; Dr Ragbir Bhathal as profiled on TVS for his research into the search for nanosecond laser pulses from outer space; Dr Ataur Rahman was interviewed for ABC news regarding his research into the upgrade of the Australian rainfall and runoff national standard; and Dr Olivia Mirza attended the Women in Science and Engineering Summit



Professor Brian Uy
Head, School of Engineering &
Director, Civionics Research Centre

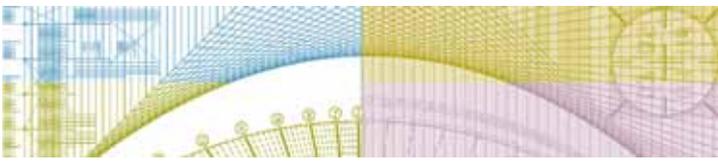
featured in the latest edition of Engineers Australia magazine.

We welcome new staff to the School; Dr Yingbin Feng and Prof Jonathan Tapson and to the Civionics Research Centre; Rachel Stoddart and Dr Won Hee Kang.

We also congratulate 'long serving' staff on having reached service milestones of fifteen years; Dr Sasha Alexander, Dr Gu Fang, Mrs Ros McCourt and Assoc Professor Mahmood Nagrial and a ten year milestone for Dr Ali Hellany.

We look forward to embarking on another productive and enjoyable second semester and wish all our students, staff and our collaborators a prosperous new financial year. ■





Research and International

ARC Grant Success

The Civionics Research Centre has been successful in the latest round of Australian Research Council Linkage Grants receiving a grant of over \$255,000 to carry out research on the development of efficient, robust and architecturally-flexible structural systems using innovative blind-bolted connections with researchers from the University of Melbourne, Swinburne University and including industry partners Ajax Fasteners and One Steel Tube Mills. The aim of the proposed project which will be led by Dr Helen Goldsworthy, Professors Emad Gad and Brian Uy and Dr Saman Fernando is to develop structural systems that have sufficient stiffness, strength, and ductility to withstand code-specified loads and that will be competitive in the marketplace. The development of demonstrable cost-effective structural systems is essential if these types of systems are to be widely adopted in practice, thus allowing Australian manufacturers of blind bolts and steel tubes to achieve a greater market share. ■

International Association of Protective Structures – Australian Chapter

Prof Brian Uy attended the inaugural meeting of the Australian chapter of the International Association of Protective Structures on June 10. The purpose of the newly formed chapter is to promote research and development associated with security and protective structures in Australia and encourage multi-disciplinary approaches and collaboration between research institutions, government and industry.



Visit to Shanghai Jiaotong University

Professor Yang Xiang visited Professor Hui-Shen Shen, the Director of Institute of Engineering Mechanics, School of Ocean and Civil Engineering at Shanghai Jiaotong University from 17 to 25 April 2011. They have carried out collaborative research on nano-mechanics and the modelling of carbon nanotubes.

TVS Science Spectrum

Dr Ragbir Bhathal appeared on the TVS Science Spectrum Program (19 April 2011) which is a documentary on researchers at the University of Western Sydney. The program featured Dr Bhathal's work on the search for nanosecond laser pulses from outer space. According to Dick Galvin, the TV critic for the Sydney Morning Herald, "the star of this episode was Dr Ragbir Bhathal". ■

ABC News Interview

Dr Rahman was interviewed by ABC reporters on 26 May on the significance of the research that he and his research group have been doing for the last three years in relation to the upgrade of the Australian Rainfall and Runoff (ARR), which is the national guideline/standard for hydrology, stream flow and rainfall estimation in Australia. This is regarded as the most used publication by Engineers Australia. The research Dr Rahman is doing will reduce the flood damage in Australia, which is in the order of millions of dollars each year. Dr Rahman emphasised that since 1987, the ARR has not been upgraded due to lack of government support. Recently, Department of Climate Change has provided the necessary financial support to upgrade ARR. The accuracy of the new regional flood estimation methods, which Dr Rahman and his team have been developing, will be much higher than the existing methods. The new method is based on a very large database

consisting of stream flow data from over 700 stations across Australia. The new method is based on the best available statistical techniques comprising of Bayesian generalised least squares regression, which is being used by US Geological Survey. Dr Rahman has been leading a Team of National Experts, which involves over 30 researchers from over 10 different organisations. There are 4 PhD students and one Research Assistant who has been conducting this research at UWS. The research outcomes will be an ARR Book Chapter and sophisticated software for industry use. These are expected to be available in a year time. This research has already generated over 20 technical papers and two internationally peer-reviewed research reports. ■



Women in Science and Engineering Summit

Dr Olivia Mirza attended the summit for Women in Science and Engineering at Parliament House in Canberra

On April 11. The topic of discussion was issues of retention and advancement for women in science and engineering professions. ■



L to R: Professor Mary O'Kane, NSW Chief Scientist and Scientific Engineer, Dr. Marlene Kanga Councillor for Finance, Engineers Australia, Dr. Olivia Mirza, Lecturer, School of Engineering, University of Western Sydney and Ms. Gaye Francis, Deputy Chair, National Committee for Women in Engineering, Engineers Australia.

Commissioning of the 1000 Tonne Testing Machine and Super Computer

School Technical Manager, Dr Mithra Fernando and Professor Zhong Tao visited the Tianshui Testing Machine production Plant in China on April 4 to witness pre-dispatch testing of the new 1000 tonne testing machine for the Structural Laboratory of the School. The machine is scheduled to be dispatched from China in mid May and due to arrive in Sydney by mid June. In the meantime the construction of the pit and preparatory works are scheduled to be completed at the same time. The installation and commissioning of the machine is expected to be completed by the end of July 2011.

The CPU and GPU components of the School's new super computer and its UPS have been delivered and are being installed at the moment. The School Super Computer is expected to be ready for use by School research staff by the end of June 2011. ■

Structural Testing Laboratory Accreditation

Following the recent Surveillance Visit and Assessment, The National Association of Testing Authorities, Australia (NATA) has endorsed continuance of NATA accreditation for the Structural Testing Laboratory of the School. Complying to ISO/IEC 17025:2005, the Structural Laboratory of the School has held NATA Accreditation since September 2003.

It continues to provide internationally recognised testing facilities and expertise not only for Australian Research Council, Discovery, Linkage, Higher Degree Research and Honours Research Programs of the School but also NATA compliance structural testing for leading industries in Australia including key industry partners BlueScope Lysaght, OneSteel and Hansons Concrete.

The scope of testing services includes: metal and metal product testing to AS 1391 or equivalent, structural testing and monitoring of various components, assemblies and structures in various metal, non-metal, concrete, timber and composite materials in the loading range from 50 Newtons to 4.5 million Newtons (4.5 Meganewtons)

The new Structural Testing Machine to be commissioned soon will enhance NATA compliance Testing capacity of the Structural Laboratory up to 10000kN compressive load, 1000kN lateral dynamic load and 500kN dynamic tilting load at 3 Hertz. ■

The CPU and GPU components of the School's new super computer and its UPS have been delivered and are being installed at the moment. The School Super Computer is expected to be ready for use by School research staff by the end of June 2011.

Upcoming Events

Science and Engineering Challenge

30 June 2011 from 9:30am to 3:00pm, Buildings U, Y & Z Kingswood Campus

Women In Engineering Presentation

(An event of EA Western Sydney Regional Group)

30 June 2011 from 1:00pm to 4:00pm

Building XA G03, Kingswood Campus

RSVP https://events.engineersaustralia.org.au/ei/getdemo.ei?id=526&s=_5SG0UQ2UE

School of Engineering Mid Year Orientation Day

28 July 2011 from 10:30am

Engineering - Building XA G03, Kingswood Campus

Industrial Design – Building VG.03, Kingswood Campus

UWS Day

28 August 2011 from 10:00am to 2:00pm

Parramatta Campus



Learning and Teaching

Sir William Hudson Award – Young Researcher of the Year



Mitchell Dinham, a PhD student of the School of Engineering at UWS, has been awarded The Sir William Hudson Award – Young Researcher of the Year Award. This award is the highest award for an engineering project that Engineers Australia confers. Mitchell's award is offered by the Welding Institute of Australia (WTIA), which is an organisation involved in the development of welding technology and standards in Australia. This award is in recognition of Mitchell's contributions to the ARC Linkage Grant project received by the School on "A Vision Controlled Autonomous Arc Welding Robot". The prize was awarded at the annual WTIA dinner in Melbourne on the 25th of May 2011, which is attended by some of the largest welding companies in Australia. Mitchell is a part time student under the supervision of Dr Gu Fang and is currently completing his PhD while working for the ARC Linkage project's industry partner Lincoln Electric. ■

Baulderstone Update, an Icon competition

Four School of Engineering students enrolled in the Construction Management course were shortlisted to participate in the Baulderstone Update, an Icon competition. The students shortlisted are Daniel Ferreira and Mato Paric, – group entry; and Scott Spencer and Ash Clark – individual entries. The competition is designed to discover and promote the most creative talent at Australia's universities and to test the knowledge and creativity of teams of university students in the fields of building and civil engineering. ■

International Enrolments and Academic Co-operation

The number of international students who have accepted offers to study the B Eng degree at UWS is 38, which shows a significant increase when compared to the 2010 figure of 18. For M Eng, 18 international students have accepted offers to commence in 2011. This figure is also higher than the 2010 figure of 15. The international enrolments in B Eng and M Eng account for about 90% of the international cohort within the School of Engineering.

The School is also working with UWS International for a possible Academic Cooperation Agreement between UWS and Jianxi University of Science and Technology (JXUST) in China. Dr Qinghua Zeng initiated this connection in late 2010. Ms Mabel Han of UWS International may visit JXUST to enhance the relationship in June or October this year. ■

Assessment of Higher Education Learning Outcomes (AHELO)

The OECD has initiated a feasibility study for the Assessment of Higher Education Learning Outcomes (AHELO). As part of this study 10 institutions from each of 16 countries around the world will be participating in the study. As part of the OECD study, on the 27 April, 4 Civil Engineering students from the School of Engineering participated in a focus group session, Phase 1 of the project, aimed at verifying and improving translation of assessment tasks and ensuring that all items have construct validity. The focus group session was coordinated by Prof Brian Uy and Jennifer Gaynor and moderated by Dr Fidelis Mashiri and Dr Haiping Zhu. ■

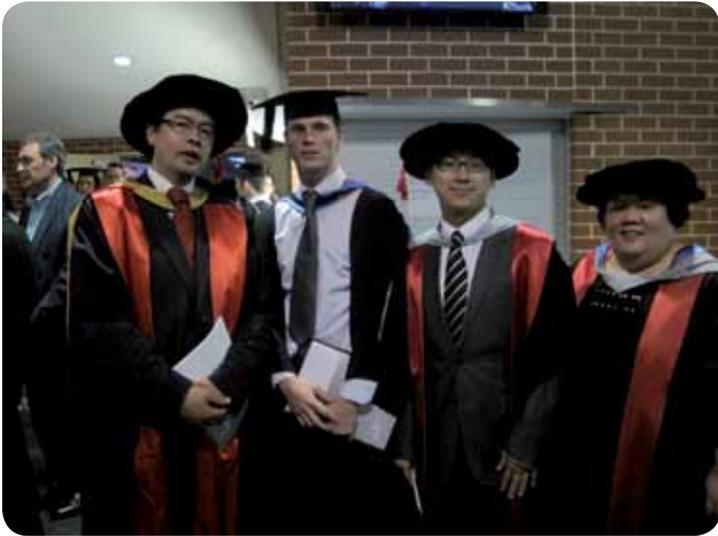
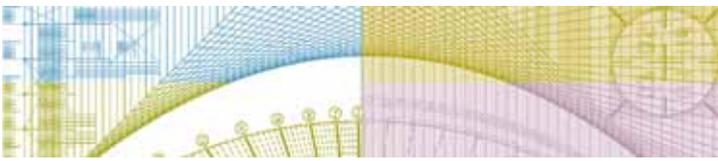
April Graduation Ceremony

A century of graduates of the School of Engineering celebrated their special achievement with their families, friends and staff on the evening of Monday 18 April, 2011 in the Ian and Nancy Turbott Auditorium of the Parramatta Campus. The School graduated one PhD student, eight Masters students, seven Graduate Diploma & Certificate students and eighty four Bachelor Degree students in the areas of Civil Engineering, Construction Management, Electrical Engineering, Design, Design and Technology, Housing, Industrial Design and Robotics & Mechatronics.

Dr Ee Loon Tan a Lecturer in Concrete Structures received his PhD at the ceremony for a thesis titled "The Effects of Partial Shear Connection on Composite Steel-Concrete Beams Subjected to Combined Flexure and Torsion". Five students were also awarded Honours Class 1 for their outstanding undergraduate performance including Benjamin Basso and Jeremy Michael Harrington (Civil Engineering); William Alfred Croft (Robotics and Mechatronics); and Manuel Demertijs and Steve Krezo (Construction Management).

In addition, Dr Sasha Alexander, Associate Head of School (Engagement and Industrial Design) also graduated with a PhD on the evening of April 16, 2011 with a thesis titled "Competition and Collaboration in the Australian Wood Furniture Industry: A Value Chain Approach". ■





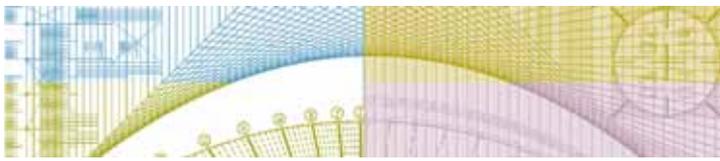
Congratulations to all students, their families and our staff for all their support over the years to our new cohort of Alumni. Students are encouraged to maintain their links with the School and join our School of Engineering Chapter – <http://www.uws.edu.au/alumni>

Engineering and IT Careers Expo

The annual Engineering and IT Careers Expo was held on April 12 in Building Z. Thirty two exhibitors from engineering and information technology industry across Australia attended including RTA, IMB, Queensland Rail, Rio Tinto and Leighton Contractors. In addition to meeting exhibitors, students also took part in a variety of workshops and seminars such as resume writing and interview skills. Comments on the day from exhibitors were positive and complimentary

- “Enthusiastic students. Very well run and organised”
- (Paige Defries, Consult Australia) and “Overall students were very friendly and well mannered, interested and patient” (James Canavan, APESMA). ■





Learning and Teaching

Research Futures Forum

The annual College of Health and Science Research Futures Forum was held on June 10 for higher degree research students. Students provided a 15 minute presentation on their research topics. The following students were presented with prizes within the School of Engineering and Civionics Research Centre;

First Prize Winners; School of Engineering

- Sumudu Wijetunge – Performance analysing of IEEE 802.15.4 medium access protocol for wireless sensor networks
- Civionics Research Centre
- Brendan Kirkland – Ultimate strength of composite beams subjected to combined actions: an experimental study ■

Runners up; School of Engineering

- equal second: Dona Shashika Biyanwilage – Cooperative Communication for OFDM Networks
- equal second: Prasana Herath – Performance Analysis of Cooperative Communication Networks
- Civionics Research Centre
- Ravinthera Nishanthan – Engineering strategies for the protection of existing foundations from ground movements due to urban construction ■

Honour students poster competition

Honour students participated in a poster competition at the Research Futures Forum.

Honour student posters winners as voted by the School of Engineering in each discipline were:

Engineering:

- Winner: Mitchell Dumesny
- Runner Up: Dulani Weeramanthrie

Construction:

- Winner: Harjit Atwal
- Runner Up: Zhenya Kremyshev

Industrial Design:

- Winner: Benjamin Lipp -
- Runner Up: Philip Jamolin

And the overall poster winner as voted by the College of Health and Science and regarded the best within the College was won by Zhenya Kremyshev – Analysis of sustainable housing and the runner up also from the School of Engineering was Mitchell Dumesny – Analysis and design of electromagnetic shock-absorber

Congratulations to all students who participated! ■

Staff

New Staff

Dr Yingbin Feng commenced on April 27. Yingbin has taken up the position of Lecturer in Quantity Surveying and has relocated from Singapore.



Prof Jonathan Tapson joined the School of Engineering on June 6. Formerly from South Africa and a professor at the University of Cape Town, Jonathan takes up the position of Professor of Electrical and Electronic Engineering and is a member of the Bioelectronics and Neuroscience Research Group.



Rachel Stoddart has been recruited into the Civionics Research Centre until the end of 2013. Rachel's position is administration assistant and she will be working Thursdays and Fridays.



Dr Won Hee Kang has been appointed to the position of Lecturer in Structural Reliability and commenced on 31 March 2011. Dr Kang obtained a B.S. from Korea University (Architectural Engineering, 2004), and a M.S. and a Ph.D. from the University of Illinois at Urbana-Champaign (Civil and Environmental Engineering, 2006 and 2011). ■



New Baby

Dr Won Hee Kang and Ms Sumin Ahn have welcomed their first baby daughter Deborah Kang. She was delivered at Westmead Hospital at 5pm on Monday 9 May 2011. ■



Staff Milestones: School of Engineering staff have reached 15 year service milestones, congratulations to Dr Sasha Alexander, Dr Gu Fang, Mrs Ros McCourt and Assoc Prof Mahmood Nagrial and to Dr Ali Hellany for reaching a 10 year milestone..

