

Plucked for the 2006 Young Tall Poppy Award

Dr Doug Aberdeen, an ANU adjunct who is working with National ICT Australia (NICTA) was recently nominated for the prestigious 2006 Young Tall Poppy Award by Professor John Richards, Director of the ANU College of Engineering and Computer Science.

"I am delighted to announce that Doug won the ACT/NSW Award for his efforts in developing hands-on and practical workshops that focus on information & communication technology for Year 9/10 high school students," said Professor Richards.

In addition to his accomplished academic career Doug has managed to combine an impressive

record of peer-reviewed papers in computer science journals and conference proceedings with an array of prestigious academic prizes and awards.

After completing his PhD at the ANU in 2003, Doug was snapped up by the newly formed centre of excellence, National ICT Australia (NICTA), for a three-year postdoctoral position. Earlier this year he was promoted to Senior Researcher in the Statistical Machine Learning Program at NICTA where he is an integral part of the research team and where he contributes significantly to the supervision of research students at the ANU.

"Doug has a phenomenal appetite for tackling extra-

curricula activities, like the NICTA Taskforces, for which he won the award," says Professor Richards.

In 2004 Doug was one of the early career researchers that helped to establish a new outreach activity for secondary students in the ACT and he has subsequently gone on to lead the Statistical Machine Learning Team to design and deliver quality workshops in engineering and computer science for the three years since. The Taskforces were the brainchild of retiring Dr Bruce Millar who saw the need for the ANU to become part of the maths/science continuum from high school through to undergraduate and PhD

studies. Doug was one of his first recruits into the program.

"I've been concerned that too many kids are turning their backs on science and maths education at the first possible chance, closing career doors that are very difficult to re-open. I am lucky to have an employer that encourages outreach activities. So for the last three years I have been devising and performing fun shows for Year 9/10 students," says Doug.

Doug couldn't do this without the enthusiastic support of several PhD and Honours students from the College that he manages to gather together in his team each year.

"We all hope to infuse a little computer science passion into high school students, so that they do give a second thought to a science career.

"What differentiates true computer science from information technology, what excites me from day-

to-day, is the potential to influence a fundamental shift in what machines are capable of, and how we interact with them."

Doug and his teams are about to roll out two new workshops in ACT high schools in robotics and computer vision.

If you would like a NICTA Taskforce to visit your school in November/December, contact Katherine Pierce on 6125 6221 or email Katharine.Pierce@nicta.com.au



Dr Douglas Aberdeen

Engineers without borders

Luke Johnson is a PhD student at ANU and is a passionate member of Engineers Without Borders (EWB) in the ACT.

"Being a Solar Engineer with experience in China, Nepal and Germany and now completing my PhD at ANU, I have had the privilege of direct experience with development projects involving Solar Energy in Nepal in 2005 with the University of NSW," says Luke.

Last year a group of final year students got together with Luke and a lecturer and set

out to raise money and develop and deliver a project in Nepal. They travelled to Shankee Bazaar Village in remote Western Nepal where they installed a 500-Watt solar energy system with 22 fluorescent lights and 4 halogens at a village health post.

"This was a really successful project that involved not only a technical solution, but also a social benefit for the village health post that served a hinterland of 30,000 people. It is still functioning with regular maintenance regimes conducted by the Nepali organizations that were partners with the project," says Luke.

"I found the experience tremendously rewarding. While with EWB I want to bring energy, encouragement and new ideas to the association and to the ACT chapter. I want to provide more solutions in developing countries for as many new projects as possible," he says.

"Having seen the direct impact that these projects

can have on communities, and the benefits that can be achieved with little more than hard work and connections that we can organise, I am keen to do more to help improve people's lives," says Luke.

Luke believes that committed individuals can connect resources via smart technical, social and cultural solutions with the people that really need them.

The ACT chapter of EWB is currently focussing on its annual and longer-term goals. It is reviewing itself in order to grow and strengthen the association so that it can continue to set up ongoing core projects for new members after veteran members move on.

D-Marie Chan is another PhD student working with Engineers Without Borders.

"I graduated from the Australian National University with a Bachelor of Engineering/ Bachelor of Arts double degree, and have been with EWB ACT Chapter for the last year," she says.

"My interest in sustainable development first started when I studied sociology

as a component to my Arts degree. The thought of understanding different societies and their specific needs influenced my motivation to help the future sustainability of communities," says D-Marie.

After being introduced to EWB by a university friend D-Marie says that she felt the association would allow her to use the skills she was learning at university and adapt them to the realm of sustainable development, both technical and non-technical.

"Now, even though I have had limited overseas experience, I have contributed to gathering textbooks to go to schools in Ethiopia, despatched volunteers to the Maldives for Tsunami reconstruction, and I have participated in Online discussions involving the acquisition of water filtration systems in Uganda," says D-Marie. If that isn't enough, D-Marie also maintains the EWB ACT Chapter website.

If you would like to learn more about EWB, or become a member, visit their website at www.ewb.org.au



Luke Johnson

D-Marie Chan

Ousting the 'devil in the detail'

The ANU College of Engineering and Computer Science is bidding a fond farewell to Dr Bruce Millar who retires from the ANU on 30 November 2006 after 33 years of research and research training in computer science at the University.

"A quiet and unassuming man with incisive intelligence and a scientist's eye for detail, Dr Millar will be missed by all his friends and colleagues among the staff and students of the University," says Professor John Richards, Director of the College.

Dr Millar has had a long and successful career at ANU where his primary interests have been in human-computer interaction. He began at the University in July 1973 where he worked with the ANU Computer Centre, and related groups, on experimental computing interfaces for linguists and psychologists.

His lifelong passion for speech and linguistics manifested itself in various research activities such as speech processing strategies for the Bionic Ear project with the University of Melbourne, establishing the biennial Australian International Speech Science and Technology (SST) conference series, establishing research networks (Australian Speech Research Association in 1978, and then the Australian Speech Science and Technology Association in 1988) for which he was the Foundation Secretary and then President.

Dr Millar's research included the Syndicated Research & Development Funding for the Technology for Robust User-conscious Secure Transactions (TRUST) project of \$3.7m. This project investigated behavioural biometric multi-modal computer user authentication using speaking, typing, pointing and writing. He was also Chief Investigator on the ARC Research Infrastructure ANSDI and ANDOSL



Dr Bruce Millar ... dreaming of retirement

Photo: Matthew Newton

(Australian National Database of Spoken Language) projects (1991-1995). The data is still being distributed on CDROMs throughout Australia and overseas.

In 1999 Dr Millar was appointed Associate Director (Education) of RSISE by the School's founding Director, Professor Brian Anderson. He was a member of the team that bid for the establishment of National ICT Australia (NICTA).

"Dr Millar oversaw a time of extended outreach during the early days of the establishment of NICTA," says Professor Anderson. "His extraordinary dedication, skills and knowledge to craft a "NICTA-enhanced" PhD at ANU and exploring the same at the University of NSW, are valued by everyone involved – especially those students who know that they graduate with one of the best PhDs in the world.

In the process, he set the standard to which the other NICTA laboratories needed to aspire."

From 1999 to 2005 Dr Millar steered the growth of the research school's PhD student cohort from 20 to 80 scholars. He also oversaw the expansion of the Summer Scholar Program and the development of secondary taskforces that take ICT research out into high schools.

"On behalf of everyone in the College, and friends and colleagues in the University, I wish Dr Millar a happy retirement and offer my sincere thanks for all he has done for our staff and students," said Professor Richards.

A farewell lunch will be held at University House on Monday 27 November.

Cindy Wang successfully applied to the ANU to undertake her fourth year Honours in Computer Science.

Dipping a toe into research



The Summer Research Scholar program has been running for the last ten years in the Research School of Information Sciences and Engineering (RSISE) at the ANU. The 10-week program introduces 3rd year students to research by involving them in a project with academic staff so that they can 'test the waters' for further study after completing undergraduate studies.

Scholars come from all over Australia and New Zealand. One of last year's Summer Research Scholars is Cindy Wang.

"Thinking back, it must have been around this time last year that I learned about being accepted as a summer scholar. I was very happy but still slightly nervous owing to a slight case of "Impostor Syndrome!". But I always like trying out new things. I love traveling so much and want to see the world. And even back then, I wanted to pursue postgraduate studies. So I knew the summer research program would be the perfect opportunity for me to gain insight into what a real research project is like. Overcoming my fears, I arrived at ANU

thinking that I would do my best to learn everything that I could."

Cindy soon discovered that the program is fun as well as educational.

"I had two really great supervisors in Dr Doug Aberdeen* and Dr Olivier Buffet because they are both wise and skilled researchers. They taught me so much. One piece of important advice was to maintain a healthy stubbornness and not give up too easily. I've stuck to this plan ever since."

Cindy enjoyed working on her project which was a reinforcement learning 'rock-paper-scissors' player that used gradient descent methods.

Cindy also attended the National ICT Australia (NICTA) showcase where she learned about other ICT research from around Australia. It's not all work either.

"At Burgmann College, I got to know many other summer scholars, and we all enjoyed Burgmann's social activities, including bush dancing, a toga party, various pub and café crawls ... there's something for everybody!"

Cindy says she got a huge boost in confidence from completing her project and along the way learned just what she was able to achieve and to believe in herself and her abilities more readily.

"By being exposed to the research environment, I also found that I really like being surrounded by people who are passionate about what they do. I am still keen to learn and to try out many new things and find my own passion. With the new attitude that I got from my summer research experience, I am definitely more positive, more resolved and more driven towards my goals."

*Doug Aberdeen completed his PhD at the ANU following his visit as a summer scholar. Doug holds an adjunct appointment at ANU and is Senior Researcher in the Statistical Machine Learning program at NICTA. He recently won the ACT/NSW Young Tall Poppy Award for his efforts in communicating his research to ACT High School Students (see story on page 1).

Collaboration with Questacon to build a robot for display at the Questacon Centre

"Few people realize how challenging it is to build a robot," says Dr Jason Chen who leads a collaborative research project between Questacon and ANU.

"The perception amongst most is driven by popular mythology and futuristic Hollywood movies. In reality, creating a robot is a highly complex mathematical and engineering project involving sophisticated computer science," he says.

"There are lots of things that researchers need to think about when we consider human-machine interaction," says Jason. "For example, what does human-machine interaction mean, why is it important and what are the applications of the technology that we produce?"

Normally robotics research is conducted in a controlled environment like a laboratory. However, Jason and his team wanted to investigate human-machine interaction in a real world environment. Questacon is an

ideal partner in that the robot that is being built will be used as a research model in the Questacon foyer. Two of the difficulties that the researchers will use the robot to overcome include improving how machines can 'hear' or 'see' individuals in a crowd in order to communicate more effectively with humans.

"Imagine a future where we could deal with machines in situations where we currently deal with a human, for example, buying tickets at the railway station, information desks in shopping centres, crowd attendants and ushers," says Jason.

These are all possible applications where the human-machine interface that the researchers are developing could be useful. There are also applications for specific components of the system, for example, finding faces in a crowd and tracking these for security or safety reasons in airports or at sporting events.

"We have implemented two communication interfaces – audio and vision," says Jason. "Getting a machine to 'speak' is an obvious communication tool, but 'eye-contact' is also important in terms of directing speech, especially in crowds," he says.

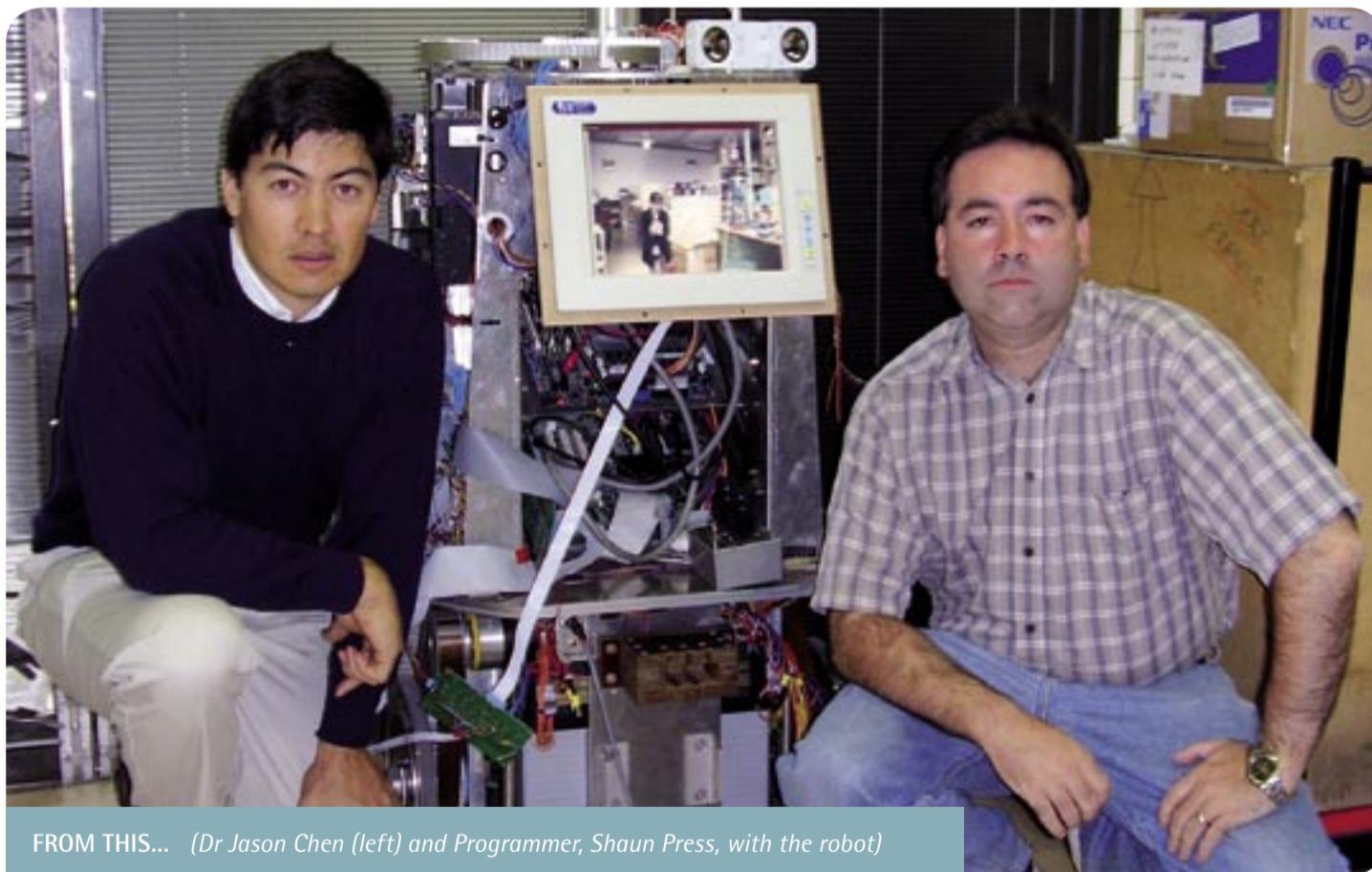
For audio the researchers use hidden Markov model based speech recognition technology. This converts an audio signal to text from which a response is formed. Then standard speech synthesis technology is used to convert text to audio for output to the robot's speakers and the robot 'talks'.

The robot 'sees' using two cameras mounted on a mechanical device that allows independent movement of the cameras so that two images are merged to see faces in a crowd. The machine then picks a face, focusses on it, and then tracks it (moving the cameras appropriately so that they always are looking at that face, even if it moves around).

"Our robot has shortcomings. We need to improve the speech recognition module so that we can cut out background noise and we also need to improve how the module differentiates between male, female and children's voices. One of the ways we hope to do this is by using the face information from the cameras to choose the appropriate voice model," he said.

The good thing about the partnership with Questacon is that this is one way of exposing a wide audience to robotics technology, backed up with accurate information about its complexity to encourage a greater understanding of the science behind it, and potential applications in society.

"It's important to note that this work is still very much in the research stage and that we are still some way off producing a system that rivals the sophistication of human-to-human communication and a truly intelligent machine that can think for itself is way in the future," says Jason.



...TO THIS (an artist's impression of the robot once the shell is manufactured)

ACT Skills Commission membership announced

At the launch of the ACT Skills Commission at the ANU on 9 November the Chief Minister Mr Jon Stanhope named the membership of the Commission saying that it included leading members of Canberra's community who shared his commitment and affection for Canberra. The Chief Minister commented that each potential member that he had approached had embraced the invitation with great enthusiasm which sent good signals to the ACT Government for the operation of the Skills Commission in the future.

Professor John Richards, Dean and Director of the ANU College of Engineering and Computer Science, was honoured to accept a position on the Commission, saying, "I am delighted to accept on a personal level as I certainly share the commitment of fellow members to Canberra in terms of its growth and prosperity as a community. On a professional level, it is fitting for the ANU, which demonstrates national leadership in engineering and computer science, to be involved in helping the ACT Government and local industry to achieve maximum return for investment in the education and training of future technologists in Canberra and the region."

The Chairman of the ACT Skills Commission, Professor Ian Chubb, Vice-Chancellor of the ANU, told everyone present at the launch that the Commission would be an active advisory body to the ACT Government and looked forward to the challenges that this would bring.

Other members include:

Ms Rosemary Follett AO, Deputy Chair (Chair of the Vocational Education and Training Board);

Mr Derek Volker AO, Chair of the Council for Education Export;

Dr Michele Bruniges, Chief Executive,

ACT Department of Education and Training; Mr Chris Peters AM, Chief Executive, ACT and Region Chamber of Commerce and Industry; Mr John Miller, Executive Director, Canberra Business Council; Mr John Hindmarsh, Managing Director, Hindmarsh;

Professor Roger Dean, Vice Chancellor, University of Canberra;

Dr Colin Adrian, Chief Executive, Canberra Institute of Technology; and Ms Sarah Schoonwater, ACT President of the CFMEU

Things go better with mentors

"You can judge a supervisor by the quality of their PhD students," Professor Vikram Krishnamurthy, Department of Electrical and Computer Engineering at The University of British Columbia says.

At just thirty-three years of age, Jonathan Manton, Queen Elizabeth II Fellow at the Research School of Information Sciences & Engineering (RSISE), is one of the youngest full professors at The Australian National University and a former student of Krishnamurthy while at Melbourne University where he gained his PhD.

While Krishnamurthy is keen to give special recognition to students who have, in his words, gone on to outshine him in their chosen research areas, full professorship at thirty-one is an outstanding achievement.

Jonathan is modest about reaching this goal within seven years of completing his PhD and credits part of his success to having excellent mentors like Krishnamurthy and others at the ANU and beyond. The mentoring role, which fosters sharing knowledge and experience from student through to early career and veteran researcher, is something he wants to pass on to his own PhD students.

"Students are the lifeblood of a university," says Jonathan. "My own experience with mentors is something I'd like to cultivate with my students. I feel that it is an important part of the relationship between student and supervisor."

Professor Manton's research interests are broadly in non-linear signal processing and computation.

"As a mathematician and an engineer I am gripped by the idea of using technology, and particularly maths, to solve complex problems which then have applications in society," he said.

Seemingly lightweight problems like audio restoration techniques to reinstate sound archived on old vinyl or shellac records that has an impact on a small section of the community, through to solving costly signal processing problems in things like mobile phones and wireless Internet that have a mass impact on many millions of people, share the same kind of research commitment from Jonathan.

So does the emerging field of systems biology which is a 'hot' new academic discipline needing mathematicians, engineers, biologists and computer scientists.

Jonathan was recently picked by the Australian Research Council (ARC) to head up the Mathematics, Information and Communication Sciences division and is currently taking leave from the ANU.

"But I am still doing my research, and supervising my students through their PhDs," he said.

Some would say he was a glutton for punishment.

"Not really," says Jonathan. "If you go to the newspapers, you see the government worried about how to create more innovation in Australia. You see articles about the lack of students in science and mathematics. The only way to try and change this is to be active – to make students interested and passionate about learning."



Professor Jonathan Manton

"Young people seem turned away from hard stuff like maths and physics. Physics, in particular, is seen as too hard for the rewards. I'm here to tell you that is not the case: the likely rewards are fantastic!"

Top Gun



The only way is up, preferably in a vertical climb, for Daniel Duggan, top left, and David Warren.

Photo: Matthew Newton

Career options aren't always evident when students think about pursuing maths, physics, engineering or computer science. They often ask, "Where can it take me?" We say the answer is 'almost anywhere you want to go' and for this astrophysicist, the only way was up in terms of job satisfaction, excitement, financial security and adventure. Where will your degree take you?

David Warren is a 50-year old millionaire astrophysicist and managing director of Tasmanian investment company, Zentel.

"I guess you could describe me as an aviation enthusiast. It's great having your own (fighter) jet. It's all about the whoosh and the roar. The sound is stunning – a higher frequency than your average commercial jet and much more exciting. A normal

jet doesn't do 700km/h vertical climbs, loops, spins and rolls. The third dimension is conquered with this – that's really what it's all about for me. And it's something you can't normally do. Being in the sky flying straight down is completely out of the ordinary. It's quite a rush.

I started flying at 17, after reading an article in National Geographic about people flying bamboo and plastic hang-gliders in California. I decided to build one with my friend AI, and we had it flying in six weeks. I'm a 'go and do it' person, so the concept of being able to make something and fly it yourself was very attractive. It really was a magnificent experience to do that Icarus thing.

My current interests are in optical astronomy and electronics for radio astronomy.

I completed my bachelor of science in X-ray astronomy at the University of Tasmania in 1980. Young people seem turned away from hard stuff like maths and physics. Physics, in particular, is seen as too hard for the rewards. I'm here to tell you that is not the case: the likely rewards are fantastic! For the past two decades, my life has been like an action movie. My business successes are all about a love of technology and believing you can do anything, anywhere, starting with the microprocessor revolution. From our technological beginnings here in Tasmania, from little old Hobart, we got a small slice of the global pie.

I've spent 20 years in the very fast lane of technology and you get used to moving forward, looking for the next challenge. I wanted to buy a jet and fly it. It takes

something like this to get me excited these days."

David teamed up with Daniel Duggan and bought a jet fighter which is used for jet adventures in Tasmania. The jet he bought is a former RAF Jet Provost Mk5 and is housed at Hobart International Airport. Dan's company, Top Gun Tasmania, with assistance from Tasair, operates the aircraft.

David says, "It'll take me quite a few lessons to master the fighter jet. I've had 12 and plan on doing two a week. It costs a lot in fuel per lesson, but speed is our friend!"

The unedited version of this article by Hilary Burden first appeared in Wish magazine on Friday 1 September 2006 and is reprinted with the kind permission of The Australian. For more, see www.topguntasmania.com.au

Whatever happened to Anthony Forlin?

Anthony Forlin graduated from the ANU with a Bachelor of Software Engineering in 2004.

Earlier this year he participated in Open Day to talk about his work and student experiences to prospective students. In a letter from the Managing Director of ConSolve, Dr Mark Grundy commented that, "More than half of ConSolve's permanent staff positions have been filled by ANU graduates like Anthony, and we are impressed at the quality, breadth and depth of software engineering knowledge in graduates of the Bachelor of Software Engineering degree in particular."

ConSolve is encouraging the Department of Computer Science to further polish the technical knowledge that students gain with softer skills such as presentation, communication and negotiation. They feel that Anthony is a good example of the kind of graduate that this can produce in terms of employability and compatibility with industry and the people they work with.

We asked Anthony why he chose ANU?

I graduated from the ANU with an Honours degree in Software Engineering. I chose Software Engineering because I enjoyed the problem solving aspect of software development and the ANU has an excellent reputation for producing graduates who are able to apply the skills they learn to new situations.



Have you managed to get a job?

Since graduating I have been working for a local IT management consulting firm called ConSolve in Canberra. For the past 12 months I have been the lead analyst on a project for the development and delivery of a multi-million dollar government information management system. As the lead analyst I have been responsible for scoping major functional and reporting enhancements, managing other analysts working on the project and presenting the system to senior executives in the government sector.

My software engineering degree has helped me undertake my current role by:

- Teaching me fundamental analytical skills required to understand problems from all perspectives
- Teaching me how to communicate with both technical and non-technical people
- Teaching me the importance of teamwork and working together to solve complex problems

Any advice for people thinking of studying Software Engineering?

It is important to understand that the ANU software engineering degree didn't teach me everything I'll ever need. What it did teach me were the core skills which have helped me to solve problems that I've never come across before, and to take advantage of opportunities that I might not have otherwise recognized.

New undergraduate degree requirements & scholarship news



Single Undergraduate Degrees

Programs for 2007	Duration	UAI required
Bachelor of Engineering	4 years	80
Bachelor of Engineering (Research and Development)	4 years	98+
Bachelor of Computer Science (Honours)	4 years	98
Bachelor of Software Engineering	4 years	80
Bachelor of Information Technology	3 years	75

Combined Undergraduate Degrees

Programs for 2007	Duration	UAI required
Bachelor of Engineering/Bachelor of Information Technology	5 years	80
Bachelor of Engineering/Bachelor of Science	5 years	80
Bachelor of Engineering/Bachelor of Commerce	5 years	80
Bachelor of Engineering/Bachelor of Arts	5 years	80
Bachelor of Engineering/Bachelor of Economics	5 years	80
Bachelor of Engineering/Bachelor of Asian Studies	5 years	80
Bachelor of Software Engineering/Commerce	5 years	80
Bachelor of Software Engineering/Bachelor of Science	5 years	80
Bachelor of Information Technology/Bachelor of Arts	4 years	75
Bachelor of Information Technology/Bachelor of Commerce	4 years	75
Bachelor of Information Technology/Bachelor of Economics	4 years	75
Bachelor of Information Technology/Bachelor of Science (Forestry)	4 years	75
Bachelor of Information Technology/Bachelor of Law	5 years	95-96

New Scholarships

The ANU College of Engineering and Computer Science (CECS) recently introduced a new suite of scholarships available for students entering undergraduate programs in 2007.

Scholarship	Amount \$AU	How to apply	Requirements
College Undergraduate Award (20 available)	\$10,000 total (\$5000 pa for years 1 & 2). Additional scholarships available for 3rd & 4th year students	Automatic consideration*	UAI 98+
College Undergraduate Relocation Award (10 available)	\$3,500 total (one-off payment)	Automatic consideration*	Interstate students moving to the ACT with a UAI of 98+. This can be received on top of the College Undergraduate Award.
Bachelor of Commerce Science (Honours) Award	\$20,000 total (\$5,000 pa for years 1, 2, 3 & 4)	Automatic consideration*	UAI 98+
College Undergraduate International Award (10 available)	\$10,000 total (\$5000 pa for years 1 & 2) Additional scholarships available for 3rd & 4th year students	Students must complete an expression of interest form *	Outstanding final school results equivalent to an entry score of 99, or outstanding results in an approved diploma program.

*Students should register an expression of interest at http://feit.anu.edu.au/_CECS_scholarships.php

CECS People

Clive Boughton

Dr Clive Boughton is a Senior Lecturer in Software Engineering at the Faculty of Engineering and Information Technology.

What do you do at university?

Since joining the ANU I have spent a great deal of time setting up and teaching into the Bachelor of Software Engineering and Masters of Software Engineering programs. I have also set up a research cell centred on the topics of Translational Development, Software Architecture and Software Complexity.

I teach software engineering subjects like: Analysis and Modeling of (Customer) Requirements; Software Design and Architecture; Software Project Management; Ways to improve Quality; Ways to measure and improve how software developers produce appropriate artifacts for a software project. These days software engineers need to know far more than programming if they are to engineer software that will meet the needs of today's industry and society.

I research new ways to help improve the way people work in the software development industry, for example, Translational Development focuses on faster and better ways to re-use software artefacts in constructing software.

What do you like most about what you do at university?

I really like teaching students who have open minds and are willing to learn new things and new ways of looking at things. These people will be able to help improve Australia's future industrial and research capabilities.

I like to research because it keeps me current and provides me with the opportunity to inform students and industry of new trends in software engineering. I think that sharing this information with students and industry excites their interest and

keeps them up-to-date with new and emerging technologies.

What do you most feel passionate about?

I feel passionate about nationwide improvement of software engineering capability within industry. This is an area in which Australia can excel but it needs more high-level support from government and the industry itself if we are to maximise economic and social benefits to Australia. Having the passion is only the first step in undertaking a pretty tough job!

What do you like to do in your leisure time?

I enjoy bird watching, natural history and reading. I'm also a dab hand at carpentry and building.



In brief

ANU teams with industry to solve ICT skills crisis

New scholarships at the ANU College of Engineering and Computer Science will help to address the ICT skills shortage in the ACT. The College and the Australian Computer Society Foundation (ACSF) have agreed to provide scholarships of between \$12,000 and \$15,000 that will combine relevant work experience and study.

"Students get the chance to enhance their skills in a real workplace doing tasks relevant to their academic studies," Vice-Chancellor Professor Ian Chubb said at the launch on 13 October. "They'll be ready for the workforce when they graduate, with excellent contacts in the local ICT industry."

ACSF Chairman John Debricant said a number of industry partners would contribute to the scholarship fund, which could provide up to 50 places by the end of 2007 and 150 by the end of 2009.



The Vice-Chancellor, Professor Ian Chubb with Professor John Richards and delegates from the Australian Computer Society Foundation

Students showcase software solutions for business

Programming solutions created by software engineering students for ACT businesses and organisations were on display for Canberra's business community this month.

Each year, third and fourth year students enrolled in the Bachelor of Software Engineering at the ANU College of Engineering and Computer Science (CECS) form small teams to create software for external clients.

Subject coordinator Lynette Johns-Boast said briefs for the teams vary each year depending on the needs of clients, which have included government departments, academic divisions, and small to medium businesses.

"Getting the students to work together, under the supervision of a fourth year peer, helps them to develop the communication skills they'll need in their careers," Ms Johns-Boast said. "They also learn the importance of working to briefs and deadlines by liaising with their external client."

"In the workplace, most projects fail because of people, not technology. This program means that our students learn the importance of the 'soft' skills like really listening, and articulating their perspectives. It also means that local organisations and businesses get a tailored software solution – something about which they've responded very positively."



Michael Lucas-Smith from technology company Wizard and IT student Tony Nguyen discuss software solutions.

Student wins Institution of Engineering & Technology prize

On 26 October the Institution of Engineering & Technology Australia held the NSW/ACT round 2006 IET Australia Technical Presentation Prize (ATPP) for undergraduate students.

This event, which is open to students enrolled in Electrical/Electronic Engineering disciplines from ACT/NSW Engineering

programs, involves contestants making a 15-minute presentation on their thesis project to a panel of judges.

This year the ANU was represented by Katie Hahn who presented her work on 'Optical Scene Reconstruction for Unmanned Autonomous Vehicle Navigation'. Interest in the use of vision based systems for the guidance of UAVs as they are known is growing because they provide a passive, low cost, light weight and low power solution to the problem of flight control while still providing a rich set of information about the environment.

Head of Department, Professor Mick-Cardew Hall says, "I am pleased to say that Katie won the event beating representatives from the University of NSW, University of Sydney, University of Technology, Sydney and the University of Wollongong. The whole College joins me in congratulating Katie on her success."

Katie will go on to the national final in Brisbane later this year. The winner of that event will represent Australia in the international event held in London.

"There are a lot of people involved in the coordination and supervision of Engineering thesis projects," says Professor Cardew-Hall. "This project was supervised by Professor Srinivasan, the respected scientist from the Research School of Biological Sciences (RSBS) who won the Prime Minister's Prize for Science in October."

"The caliber of projects and the researchers involved in them demonstrate that the Engineering program at ANU is allowing students to undertake challenging projects that reflect the research-intensive and interdisciplinary nature of the University, which make it and the Engineering program so distinctive."



Katie Hahn

NICTA Taskforces roll out new workshops to schools

The NICTA Taskforces have developed two new workshops for high school students in Years 9 and 10 in the ACT.

"We've created new workshops on robotics and computer vision to complement our previous workshops," says Dr Doug Aberdeen who coordinates the Taskforces at the ANU.

"What is a robot? How is it created? Are we talking about machines that are programmed to do something for us, or are we talking about machines that can see, think and act for themselves?" says Doug.

These are some of the questions that the robotics workshop takes participants through, as well as introducing students to some fun activities that demonstrate how robots move and communicate.

"We also have a new workshop on computer vision," says Doug. "How can we create computers that can see like a bee does, and why is this useful for robots? This is a complicated and interesting question for computer scientists to answer and we show students what some of the difficulties are," he said.

There are a total of five workshops to choose from that focus on the usefulness of maths, physics and science which all involve some element of engineering and computer science. Contact Katherine Pierce 6125 6221 or Katharine.Pierce@nicta.com.au to arrange for a taskforce to visit your school. There is no cost to schools, and the shows are a fun and educational way to end the school year.

The yellow submarine

In August 2004 the autonomous underwater robot called Serafina entered the world stage with a big media splash that brought tremendous dividends to the research group, led by Dr Uwe Zimmer at the ANU.

"We were inundated with hundreds of enquiries about the submersible and how it could be put to use in research, exploration and for leisure activities in the ocean," says Dr Zimmer.

The team of researchers behind Serafina is now working with a number of partners on components, materials and marketing to deliver a new model of Serafina which looks and performs better than before.

"A company called Advanced Technology Systems Australia, based near Newcastle, is manufacturing new shells for Serafina, and developing a new thruster. We are also working on a new underwater communications system," Dr Zimmer said.

"One of the most interesting things we are working on is researching ways for the submersible to communicate as part of a swarm, like a school of fish," he says.

"This is a great challenge because no-one really knows how schools of fish communicate, and it marries up biological and computer science in a similar fashion to research involving bees and other insects in areas like computer vision."



Serafina MkII now in production

Student recruitment

Academic and marketing staff in the the College regularly visit overseas agencies to encourage higher degree by research students and undergraduate students to consider studying at the ANU. Recently staff have visited India, Singapore, Malaysia and China.

On the domestic front, the College was part of an advisory evening in Bowral for Southern Highlands Schools, and it continues to visit ACT schools regularly.

"We've been seeing a bit of an upturn in interest in engineering and IT both locally and overseas," says Francesca Jones, Marketing & Student Services Officer.

"We're happy to visit local schools at any time," she says. "If you would like someone to visit your school then please contact Student Services."

R&D scholars visit to RSISE

A group of students from the Research and Development (R&D) Scholars Program in the Department of Engineering recently visited the Research School of Information Sciences & Engineering (RSISE) for better insight into the research that goes on within the College.

"The R&D Scholars Program in Engineering is for the top students in the Department of Engineering. They typically have a UAI between 85 and 99 percent," says Dr Jon Kim the lecturer who runs the Program.

They were joined some of the top Bachelor of Computer Science students in the Department of Computer Science.

"By being exposed to the research environment in the College we are encouraging students to consider the kinds of options that are available to them after graduation and this includes PhD study," he says.

"The visit also helps students to get a better grasp of the research-intensive environment in which they are studying and helps them to network with senior researchers within the College. Some of these researchers, in turn, have networks with industry and other research agencies. This is all valuable to our

students," he says.

Students took part in a comprehensive program of talks and demonstrations involving staff and students in RSISE, FEIT and NICTA. They covered collaborative engineering and computer science research activities in the College in a day-long visit which also included a lunch specially hosted by the student group at RSISE.

"We'll be back next year with a new group of students," says Jon.

ANU 60th birthday celebrations

The College was part of the ANU 'Hidden Treasures' campaign as part of the 60th Birthday celebrations on 30 July 2006.

"Up to 300 ANU staff and their families flocked to our displays," says Heather McEwen, Marketing Manager with the College.

"Dr Henry Gardner and his students prepared a special virtual birthday cake to demonstrate how the WEDGE Virtual Reality Theatre put people 'in the picture' so that they could experience being immersed in a computer program."

Dr Uwe Zimmer and his students took Serafina, the small research submarine, through her paces at a display in the test tank.

"Once again College staff and students have demonstrated their support for publicizing their research and teaching interests to a wide audience. Thanks from everyone in the Marketing Team," says Heather.

Siemens Science Experience

The College recently welcomed 30 high school students at a The College recently welcomed 30 high school students at a robotics workshop developed by researchers in the Faculty of Engineering and Computer Science (FEIT). The students were all involved in the Siemens Science Experience organized by Dr Greg Lane at the ANU.

The students built robots from Lego and then raced them in a 'Demolition Derby'. The aim is to introduce students to some of the technology behind creating robots so that they have an idea of where maths and physics can take them if they pursue study in these areas.

The College has been involved in the Siemens Science Experience for several years as part of its ongoing outreach program.

Open Day at ANU

The College had one of its most successful Open Days ever this year.

A steering group comprising academic, technical and administrative staff put their heads together to come up with innovative projects in engineering and IT for display, an informative seminar series, a special lunch for prospective female students and their parents and friends, a BBQ on the solar BBQ – even a local student band!

"My thanks and congratulations to everyone involved. It takes a lot of people to put on a day like this and we couldn't have done it without the enthusiastic support of staff and students," says Paul Melloy, Manager of Student Services.

Approximately 250 prospective students, plus their family members and friends, attended the CECS Open Day which was livened up with the impromptu fire practice and caused the live band to 'disband' rather quickly.

"Other than this, everything went very smoothly and I am keen to see the results in increased enrollments and interest in undergraduate study in engineering and IT," said Paul.

College celebrations and staff awards

Professor John Richards invites all College staff to lunch to give the whole College the chance to celebrate the end of the year, our work, life and family achievements for 2006.

12–2pm Wednesday 13 December
Drawing Room, University House, ANU

RSVP to Debbie McCusker
debbie.mccusker@anu.edu.au

InfoDesk

Mentoring for Female Software Engineering Students



Female students make up less than one quarter of the Software Engineering and Computer Science student body. Consequently, for some young women, it can be a little daunting to undertake study in this field.

"During the 2006 academic year we started a mentoring group especially for female students who are studying towards a Bachelor of Software Engineering," says Lynette Johns-Boast, Associate Lecturer in the Department of Computer Science.

"The purpose of this group is to provide a peer support network, especially for early year students to help them to develop their networking skills, allow later year students to mentor early year students, and to provide a friendly environment where we can get together and talk about the issues that we face working and studying in a male-dominated field," says Lynette.

So far the group has met twice over coffee and has proved popular with third and fourth year students. The aim now is to encourage the more hesitant first and second year students to come along. Lynette also has plans to organize a web-based communication forum so that everyone can chat outside the get-togethers.

Lynette has over 20 years industry experience and joined the ANU as an academic in 2003.

"I still maintain close links with industry and I am keen to encourage women into the industry because we have a lot to add simply because of our gender. Unfortunately, software engineering still has a rather geeky image and has not managed to get across the message that we need people with strong people skills - something that women tend to demonstrate more than men," she says.

"The new message is 'geek is chic'. IT pays very well, there are many career prospects around the world, and we work in exciting team environments," says Lynette.

"I would love to hear from any female students who would like to join the mentoring group. My office is on the 3rd Floor of the Computer Science Building (N327) and I can be contacted by email lynette.johns-boast@anu.edu.au. New ideas and new members are always welcome."

Adjusted UAI entry scores

The ANU recently announced revised UAI entry scores for 2007. Our entry scores are:

- Bachelor of Engineering (UAI 80)
- Bachelor of Software Engineering (UAI 80)
- Bachelor of Computer Science (Hons) (UAI 98)
- Bachelor of Information Technology (UAI 75)

Combined degree scores will be the higher of the two programs that are being combined. For more information visit our Website at www.feit.anu.edu.au. Use the link under News.

Some important UAC dates to remember

20 December	NSW HSC UAI's available on UAC website
21 December	ACT UAI's available on-line from UAC
21 December	Information Session for ANU Engineering and Computing applicants
4 January	Last date to change preferences for the UAC Main Round
17 January	UAC Main Round offers e-released

Guaranteed Accommodation

Undergraduate students who are new to the ANU from outside the ACT and who are commencing study in Semester 1, 2007, will be offered a place in a University Hall, affiliated college or other approved University accommodation.

To find out if you qualify: <http://accom.anu.edu.au/UAS/200.html>

Interested students should register Online between 26 August 2006 and 17 January 2007
http://accom.anu.edu.au/Accomm/Halls/Register_2007.php

Options for students within five UAI points of entry requirements

The College currently has two schemes for students who feel they may not quite achieve the UAI required for entry into specific CECS undergraduate programs. These schemes include:

Maths Bonus Points - Up to 5 UAI points may be accessed for students who have undertaken specific maths subjects.

Special Consideration Bonus Points - Up to 5 UAI points can be accessed for students who can demonstrate evidence of a particular interest or ability.

New Scholarship Scheme

The College recently introduced a new suite of scholarships available for students entering undergraduate programs in 2007:

- College Undergraduate Scholarships
- College Relocation Scholarships
- Bachelor of Computer Science Scholarships
- College Undergraduate International Scholarships

For more information see the Scholarships link under News at www.feit.anu.edu.au

I look forward to welcoming our new undergraduate students next year.

Paul Melloy

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ANU College of Engineering and Computer Science

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Some stories have previously appeared in
On Campus and *ANU Reporter*.

For more about ANU visit the ANU Website:

www.anu.edu.au