Thanh-Mai Diep

The Accidental Engineer

Thanh-Mai Diep’s involvement in engineering happened almost by accident. After childhood aspirations to fashion design, photography, architecture and psychology, she set her sights on medical research. Genetics, genomics and proteomics became her passion and in her quest to discover more about these fields she was advised to take some computer science subjects to supplement her medical science degree and to give her some practical research skills. The computer science subjects turned into a software engineering degree with honours class one and the university medal among several awards and accolades.

Now employed as a graduate software engineer with Silverbrook Research, Thanh-Mai explains that it was the problem solving and creativity required for her software engineering degree that won her over and was the reason behind her outstanding academic results. She enjoyed her work so much that she sought out extracurricular reading and became passionate about the subject area. “Since I did both medical science and software engineering I was lucky that I could compare them both side by side and eventually chose engineering” she recalls. “Engineering and IT subjects were very practical. I really enjoyed programming and applying...
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editorial

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The Faculty has been very successful in gaining support for its teaching and research in the areas of Power, Energy and Mining. Sir William Tyree, through the AW Tyree Foundation, recently made a donation of $1m to the School of Electrical and Information Engineering to assist in the establishment of the Power Engineering laboratory. Professor Agelidis, Energy Australia Professor of Power Engineering, is looking to buy a large Power Systems Simulator to locate in the laboratory to give students hands on experience in all aspects of power systems. We are very grateful to Sir William for this generous gift. We believe the simulator will assist with the development of the CDIO teaching initiative in the School started by the former Head, Associate Professor David Levy.

The Chairs Appointments Committee of Senate approved the naming of the Delta Chair of Sustainable Energy Development at its meeting on 18th June 2007. The new chair will be located in the School of Chemical and Biomolecular Engineering and will be funded by Delta Electricity. This is a great opportunity for the Faculty to take a leading role in research, in teaching and in public debate in the area of sustainable energy.

The Australian Centre for Field Robotics (ACFR), led by Professor Hugh Durrant-Whyte, finalised an agreement on 5th July with Technical Resources Pty Ltd, a member of the Rio Tinto Group of companies, to establish a new Centre for Mine Automation in July. At its meeting on 6th August, the Senate approved the naming of the Centre as the Rio Tinto Centre for Mine Automation. The agreement provides for funding of $21m over an initial 5 year period. The Centre will support up to 30 full-time staff and ten research students and will work in the areas of mine automation architecture, drill rig automation, autonomous haulage and aided loading.

Professor Gregory Hancock, Dean
Thanh-Mai Diep

continued from page 1

everything I learnt in IT lectures. All I needed was a computer and I could create arbitrarily complex programs."

Thanh-Mai’s passion for software engineering led to project work with the School of Information Technologies and the CSIRO. She developed software which automatically analysed MRI Scans of the brain as a part of a larger collection of tools designed to help doctors diagnose schizophrenia and other neurodegenerative disorders. Her work was so impressive that her supervisors presented the results at conferences, generating industry attention. Microsoft Research now sponsor a PhD to follow up the work that she did with Dr Uwe Roehm in the School of Information Technologies.

When asked if she sees herself as a role model to young people considering a career in engineering, Thanh-Mai says that she prefers to be viewed as “an example of someone who was confused about which career path they wanted to take, and is now very happy where they are.” It seems, however, that she has become somewhat of a role model within her family as her younger brother and cousin are now both completing engineering degrees at the University of Sydney. She acknowledges that she could not have achieved her goals without the support of her family in Australia and Vietnam and she draws much of her strength from them. “Learning about our family’s past inspires me to work hard and not take the opportunities that I have been given for granted.” she said.

Although her current employment is not in the medical field, Thanh-Mai has not given up on her medical research goals and she hopes to one day be able to combine her skills in biology with computer science. She sees scope for crossover between engineering and medical science in the area of bioinformatics. “If my engineering project work could aid early diagnosis and improve the quality of patients’ lives, that would be fantastic.”

Interview by Susanna Smith
engineering sydney alumni of the year awards

nominations now open

Do you know of a University of Sydney Engineering Alumnus who has shown dedication to the profession? Have you heard about a former classmate who has contributed to the community? Has an alumnus’ creativity or leadership ability caught your attention? You now have the chance to acknowledge the contributions they have made by nominating them for an Engineering Sydney Alumni of the Year Award.

The inaugural Engineering Sydney Alumni Awards presentation ceremony will take place on October 27 in the MacLaurin Hall as part of the university-wide Spring Back to Sydney reunion.

Awards will be presented in three categories: Engineering Sydney Alumnus of the Year, Engineering Sydney Young Alumnus of the Year (restricted to Alumni aged 35 and under by the end of the current calendar year) and the Engineering Sydney 2007 Award (for an alumnus who graduated in a year ending in 7).

Nominations are now being accepted online at http://www.eng.usyd.edu.au/engineeringsydney/alumniawards.shtml or by contacting Keiran Passmore, Executive Director of Engineering Sydney on k.passmore@eng.usyd.edu.au or telephone 02 9351 5768.


Spring Back to Sydney reunion in 2007


SAVE THE DATE! Saturday 27th October, 2007

Relive the memories of your university days and celebrate your anniversary graduation with family and alumni colleagues.

To RSVP, please complete the registration form available online at: www.usyd.edu.au/alumni/activities/reunions/spring.shtml or call +61 2 9036 9222

Also visit our ‘Look Who’s Coming’ webpage to see if your alumni friends will be attending!
Australia’s first Professor of Electrical Engineering was once disparaged for “playing with toys”, but his foresight and appreciation of the importance of the interaction between teaching and research allowed him to develop a strong group of engineers and physicists who gave Australia a solid background in communications engineering.

By Susanna Smith

John Madsen had the honour of graduating from the University of Sydney with the University Medal twice – once in 1900 with a B.Sc. in Mathematics and again in 1901 with a Bachelor of Engineering with Honours First Class. After graduating he was appointed lecturer in mathematics and physics at the University of Adelaide and it was there that he established a long association with Professor (Sir) William Henry Bragg. Madsen’s studies with Bragg related mostly to radioactivity and x-rays at a time when knowledge of this scientific area was growing. Madsen received his D.Sc while in Adelaide, but in 1909 his ongoing interest in the practical application of science led him back to the University of Sydney where he accepted a lectureship in the rapidly growing School of Engineering.

In 1915 Madsen was commissioned to the Australian Military Forces, first as a captain and later as officer commanding the Engineer Officer’s Training School, a position he held until 1918. On return to the University of Sydney, a promotion made Madsen the first Professor of Electrical Engineering in Australia. Believing that successful engineering practice depended on a solid base of physical science and to cope with the increasing complexities of technology, he encouraged students to take five year double degrees in science (maths and physics) and engineering, making it mandatory for those who were taking honours degrees. Madsen’s lectures were unconventional but effective, wasting little time on what could be read in books while concentrating on relating practical applications to the principles they were based on.

Madsen also had a strong belief in the link between teaching and research which led him to cultivate a strong group of engineers and physicists engaged in basic research in communication engineering. He refused to let funding shortages stand in the way of research and much of the equipment developed in the department originated in what was known as “Madsen’s junk heap”, a collection of scrap machinery and components acquired from a variety of sources. Madsen’s dedication to research was not shared by many conventionally trained engineers in the power-supply industry who dismissed him as “playing with toys”, but Madsen’s persistence would pay off. He foresaw the growth of the communications industry in Australia and provided it with a solid foundation of relevant research.

Madsen was associated with the Council for Scientific and Industrial Research (CSIR) from its foundation in 1926, proposing the formation of the Radio Research Board and acting as chairman of the board from 1927-1958. The purpose of the board was to encourage and support research in the universities and provide a link between academic research and the more industrially oriented research of the CSIR. Although this approach was criticized by those who believed that research should be controlled centrally, Madsen insisted that universities should perform independent research and his persistence resulted in the Radio Research Board maintaining its independence. The Sydney group of the RRB worked out of Madsen’s Electrical Engineering department on Science Road (now the Badham Building) and concentrated on wave propagation via the ionosphere, a concept proved by Edward Appleton in England around the time. The RRD had a profound influence on
Madsen proposed the establishment and maintenance of national standards of weights and measures, a function that was allocated to the CSIR under its Act. The National Standards Laboratory Building (Now the Madsen Building) was completed in 1939 and began operation soon after. The National Standards Laboratory became the custodian of the legal standards of physical measurement for Australia.

Recognising the importance of rapid interchange of information between allied countries during World War II, Madsen led Australia’s contribution to the allied development of radar and held the position of chairman of the Radiophysics Advisory Board between 1939 and 1941. After the war Madsen maintained his interest in radio research and in 1949 he became a member of the State committee and the advisory council of the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Between 1945 and 1966 he was the chairman of the National Association of Testing Authorities and the Electrical Research Board. Other positions held by Madsen include chairman of the Australian National Research Council, president of the Australian branch of the Institute of Physics, member of the Royal Society of New South Wales and fellow of the Institution of Engineers, Australia and of the Australian Academy of Science.

Madsen was knighted in 1941 and awarded the (Sir) Peter Nichol Russell memorial medal of the Institution of Engineers Australia in 1944. In 1954 the University of Sydney presented him with an honorary D.Sc.

Engineers Australia recognize the achievements of Madsen by awarding the annual John Madsen Medal for the best paper written by a member of Engineers Australia or ITEE published in the Australian Journal of Electrical and Electronic Engineering.
The annual Research Conversazione is the Faculty of Engineering and Information Technologies’ major annual event to showcase the research undertaken by students over the past year. It is an ideal opportunity for industry representatives and alumni to network and make contact with the engineers of the future.

The 2007 Research Conversazione will take place on Friday October 26 between 12 noon and 4pm. The event will commence with a welcome address that includes drinks and cocktail food in the Seymour Centre followed by poster displays and prize presentations in the Schools of Civil Engineering, Chemical and Biomolecular Engineering, Aerospace, Mechanical and Mechatronic Engineering, Electrical and Information Engineering, Information Technologies and the Faculty of Architecture.

The Research Conversazione is a key pillar of the Engineering Sydney objective to bring industry and students together. It is also an opportunity for guests to view the state of the art facilities of the faculty and to speak to key members of research teams.

Engineering Sydney invite anyone interested in the research produced by the faculty to register to attend the Research Conversazione.

To register online go to http://www.it.usyd.edu.au/conversazione/ or contact Keiran Passmore, Executive Director, Engineering Sydney on k.passmore@eng.usyd.edu.au or telephone 02 9351 5768.

We look forward to seeing you at the Research Conversazione.
Professor Springer’s path to the University of Sydney was an unusual one. After fleeing the 1956 revolution in Hungary, he arrived in Sydney with a limited knowledge of English and little more than the shirt on his back. After working at various odd jobs he decided to complete the engineering degree, that he had started back in Budapest, at the University of Sydney. In March 1957, accompanied by a translator, he met with the Dean, passed an English test and was admitted to third year of the mechanical engineering degree. Young George Springer learnt the hard way, by copying notes word-for-word from another student and translating them into Hungarian. He overcame these barriers to win a string of scholarships and prizes before graduating in mechanical engineering in 1959.

With a scholarship from CSR, he set off for Yale University in the United States where he gained a PhD in solidification and melting processes. This was followed by academic positions at MIT and University of Michigan.

In the 1970’s, Professor Springer’s friend and fellow student at Yale, Dr Steve Tsai, chief scientist of the US Air Force Material Laboratory, suggested that he move into the new field of composite materials and it was in this field that Dr Springer built a high profile international reputation. In 1983 he moved to Stanford University where he expanded his composites research and established Stanford as a world leader in this area of research.

Professor Springer’s work has resulted in increased reliability, safety and cost effectiveness in the aerospace, automobile and civil infrastructure industries. He is now Paul Piggott Professor of Engineering, Professor of Aeronautics and Astronautics, Professor of Mechanical Engineering and Professor of Civil Engineering at Stanford University. He has been recognized worldwide for his achievements and contributions to the field of composites.
Rio Tinto to fund new centre for mining automation

Mining giant, Rio Tinto, have committed $21 million over five years to a new research and development centre for mining automation to be based at the Australian Centre for Field Robotics and led by Professor Hugh Durrant-Whyte. The Australian Centre for Field Robotics is one of the largest and most successful robotics research groups in the world and is the lead partner in the Australian Research Council Centre of Excellence for Autonomous Systems.

The new initiative complements the recently announced Hydrogen Energy Initiative, a joint endeavour between Rio Tinto and BP to investigate clean coal/hydrogen power in Kwinana, Western Australia.

Rio Tinto’s chief executive, Tom Albanese, said that Rio Tinto was increasing its innovation effort to position the group to develop ore bodies around the world. “Australia is a natural base from which to support our operations with the innovative technical solutions they will need in the future. A common feature of Rio Tinto’s technical and innovation activities is their strong linkages with Australian academic and research institutions. This focus is a vote of confidence in Australia’s innovation capability,” he said.

The Centre for Mine Automation aims to improve safety, predictability, precision and efficiency of mining by developing automated and remotely operated mining processes.

The Centre will support up to 30 full-time staff and ten research students with $5 million funding per year when fully staffed.
calendar of events

October

1  Nominations for Engineering Sydney Alumni of the Year Awards close
Contact Keiran Passmore, Executive Director, Engineering Sydney
Phone 02 9351 5768 or k.passmore@eng.usyd.edu.au

26  Research Conversazione, Seymour Centre and Faculty-wide locations
Contact Keiran Passmore, Executive Director, Engineering Sydney
Phone 02 9351 5768 or k.passmore@eng.usyd.edu.au
http://www.it.usyd.edu.au/conversazione/

27  Engineering Sydney Alumni of the Year Awards, MacLaurin Hall.
Spring Back to Sydney Reunion - University-wide.

November

30  Engineering and Information Technologies Graduation Ceremony
Great Hall, University of Sydney, 4pm.
Deans Advisory Committee

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John Young                         President of the Aerospace, Mechanical and Mechatronic Engineering Foundation
Peter North AM                     Chairman, Warren Centre for Advanced Engineering
John Doherty                       President, Engineering Sydney Alumni Association
Blake Mair                         President, SUEUA (Student Organisation)

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