

ACI Newsletter, Number 39, September 2010

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New Member Profile: Natasha Mendes

Natasha Mendes is qualified with a Bachelor of Mechatronic Engineering (Hons), and CertIV in Project Management. She joins the NCACI as the Young Engineer Representative.

Natasha works at *Cochlear Ltd.* in Sydney as a Quality Systems Engineer. Previous to this, she worked at a number of Engineering companies including: *Honeywell Ltd.* (Project Engineer and Manager), *CSIRO* (Honours Thesis Student), and *BHP Billiton* (Process Engineer).

In 2006, Natasha graduated from the University of Queensland (UQ). Whilst at UQ, Natasha was President of Young Engineers Australia – UQ, and was the student representative for the Faculty of Engineering and Physical Sciences and Architecture. During this time, Natasha completed her Honours Thesis with the CSIRO – ICT Division in Brisbane.

In recent years, Natasha has worked in Sydney, Canberra and New Zealand on projects ranging from Prison Electronic Security Systems, to Retail HVAC systems, to Biomedical manufacturing.

Natasha looks forward to making a difference with the NCACI.



Australian Control Conference - AUCC 2011



Organising Committee

General Chair

Dragan Nesic
University of Melbourne

Technical Programme

Iven Mareels
University of Melbourne

Publications

Julio Braslavsky
University of Newcastle

Local Arrangements

Chris Manzie
University of Melbourne
Robert Schmid
University of Melbourne

Finance and Registration

Denny Oetomo
University of Melbourne

Publicity and Sponsorships

Vaughan Clarkson
University of Queensland

Conference Secretary

Ying Tan
University of Melbourne

Inaugural Australian Control Conference

<http://www.aucc.org.au>

The Australian Control Conference (AUCC) is a new conference series that is organised by the Institution of Engineers Australia (IEAust) through its National Committee for Automation, Control and Instrumentation (NCACI). It is technically sponsored by the IEEE Control Systems Society. The purpose of the conference is to provide a forum for Australian researchers, students and control engineers from industry and government organisations to exchange ideas and recent results, as well as discuss current problems, arising in control engineering research and industrial practice. At the same time, international contributions are encouraged and will be solicited for.

The conference will be organised annually and will be held in various locations in Australia. The inaugural AUCC will be held in Melbourne in 2011. The strategic direction and decisions are provided by the AUCC Steering Committee, a sub-committee of NCACI, IEAust. Each year the Steering Committee appoints Organising and Technical Committees that are responsible for organising the conference in a given year.

The technical programme of the conference consists of oral presentations, poster presentations, keynote lectures and special industrial sessions whose purpose is to encourage a better exchange between practising control engineers and researchers in universities and government agencies. Postgraduate students will be encouraged to attend through reduced registration fees.

The proceedings will be available from the Engineers Australia online library and from *IEEEXplore*[®] (subject to final confirmation).

Important Dates:

Submission of camera-ready papers:	25th April, 2011
Author notification:	11th July, 2011
Final upload of papers:	11th August, 2011



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M. A. Sargent Award: Dr. David Skellern

The *M. A. Sargent Medal* was awarded (jointly by the Electrical and ITEE Colleges) to Dr. David Skellern. According to the citation he was awarded the medal for “... *the breadth and depth of his contribution to technical innovation, his eminence in the practice of electrical engineering and his exceptional management and leadership in Information and Communications Technology*”.



Dr. David Skellern (on the right) receiving the M. A. Sargent Medal from Dr. Michael Sargent (the Past National President) in whose honour the award is named.

Dr. Skellern has been CEO of National ICT Australia (NICTA) since mid-2005.

ACI Undergraduate Thesis Prize 2009

Every year, the NCACI invites undergraduates from around the nation to submit theses incorporating elements of Automation, Control and Instrumentation (ACI) for assessment for the NCACI Undergraduate Thesis Prize. The Award seeks to recognise excellence in undergraduate project work in ACI engineering; comprising a medal, certificate and monetary prize. Depending on the standard of applications, from time to time the Committee may also choose to award Certificates of Commendation to highlight particular submissions.

The assessment process for the Prize not only focuses on the quality of thesis submission and technical merit but also the level of innovation, industry relevance and integration of the three elements of automation, control and instrumentation.

This year the Prize was presented at the Electrical College Awards Dinner held at the Matilda Bay Function Centre in Perth (21st May 2010) in conjunction with awards from the Electrical College and the National Committee on Space Engineering.

The 2009 Undergraduate Thesis Prize in Automation, Control & Instrumentation was awarded to Daniel Wilson for his thesis submission titled "*A Low-Cost Autopilot for Small Unmanned Aerial Vehicles*".



David Wilson (left) receiving the 2009 Undergraduate Thesis Prize in Automation Control & Instrumentation from NCACI Chair Brandon Lee.

The prize-winning thesis presents the design, assembly and flight testing of a low-cost autopilot, for small fixed wing UAVs. Daniel offers integrated ACI solutions to the given problems and addresses all elements in a balanced innovative manner from conceptual development through to end testing. The high quality of presentation, the level of work and passion demonstrated resulted in Daniel's selection as a very worthy recipient of the 2009 Prize.

The NCACI also awarded a Certificate of Commendation to Steven Kim Lay for his thesis titled "*Design of Wireless Networks for Smart Metering*".

Smart metering is a subject extremely relevant to Australian Industry. Steven's thesis looks in detail at wireless interfacing issues for smart meters and provides in depth solutions. The quality of presentation and direct benefits for Australian industry were key to Steven having received a commendation for his efforts.

Daniel Wilson was also awarded the 2009 Undergraduate Thesis Prize in Space Engineering at the Electrical College Awards Dinner.

The NCACI would like to thank all undergraduates who submitted their theses for assessment this year and would like to invite new submissions for the upcoming 2010 Undergraduate Thesis Prize.

The abstracts of the 2009 Prize Winner and recipient of Certificate of Commendation are reproduced below:

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"A Low-Cost Autopilot for Small Unmanned Aerial Vehicles" by Daniel Wilson

Small UAVs have become an increasingly popular solution to a variety of problems including environmental monitoring, disaster assessment, and airborne surveillance. However, commercially available autopilots are expensive and difficult to obtain. Open source solutions are affordable and accessible, yet they often lack key features that are found in the commercial counterparts.

This thesis presents the design, assembly and flight testing of a low-cost autopilot, for small fixed wing UAVs. The complete system architecture, including the onboard avionics and the Ground Control Station are outlined and explained. An Explicit Complementary Filter has been implemented to obtain an estimate of the aircraft's attitude and control laws have been developed to achieve mission objectives. Finally, the autopilot was demonstrated in a series of flight tests, which confirms its functionality as an autonomously operating UAV, capable of waypoint navigation. The initial low-cost objective has been achieved as the final cost of the avionics was AU\$825, which is significantly less than commercial systems. Additional development could reduce this price considerably.

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"Design of Wireless Networks for Smart Metering" by Steven Kim Lay

With the current social concern on the environmental impact of human activity on climate change, there has been a push for the reduction of energy and resource consumption. Efficient use of energy and resources is a priority of many governments, and a reduction in greenhouse gas emissions is desired.

As the demand for energy increases in Australia, it is estimated that a new peaking power plant will be required in NSW in ten years time. As generation from peaking power plants commonly utilises carbon based non-renewable resources, greenhouse gas emissions will consequently increase. By building a smarter electricity network, efficiency can be increased and peak demand reduced, delaying or negating the need for new peaking power plants. Smart Metering is one of the fundamental components of an intelligent network.

This treatise outlines the work undertaken to assess the suitability of Wavenis technology for use as a wireless communications protocol for such a Smart Metering system. By developing new hardware and software for use with Wavenis, real-world performance and developmental requirements is demonstrated.

IFAC- 18th World Congress

The 18th World Congress of the International Federation of Automatic Control (IFAC) will be held in Milano Italy, August 28th to September 2nd 2011

The deadline for submission of full draft papers, invited session proposals and pre-congress tutorial and workshop proposals is 30th September 2010.

Additional information is available on the IFAC 2011 web site: <http://www.ifac2011.org> .

Book: National Committee on Automation Control and Instrumentation (NCACI) - A History: 1986 to 2010

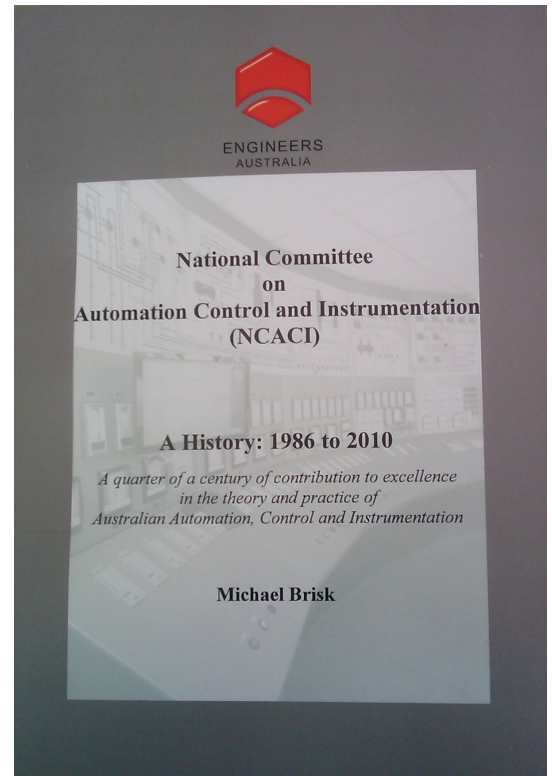
The history of the National Committee on Automation Control and Instrumentation (NCACI) has now been published in a book, written by Emeritus Professor Michael Brisk on behalf of the NCACI.

National Committee on Automation Control and Instrumentation (NCACI) - A History: 1986 to 2010 (ISBN: 978-0858259393)

It is a well written book that covers the history of the committee from 1986 through to 2010, and includes the history of prize winners for the *Undergraduate Thesis Prizes* and the *National Project Excellence Awards in ACI*.

An electronic copy of the book is available for download below. To purchase a hard copy for \$19.95 (including GST & postage) please [contact us](#) at ncaci@engineersaustralia.org.au.

An electronic copy can be downloaded from the website at: [National Committee on Automation Control and Instrumentation \(NCACI\) - A History: 1986 to 2010 \(PDF 18MB\)](#).



2010 ACI Undergraduate Thesis Prize – Call For Entries

The National Committee on Automatic Control and Instrumentation (ACI) awards the Undergraduate Thesis Prize every year.

This prize recognises excellence in undergraduate project work in ACI engineering. The award aims to:

- encourage undergraduate interest in ACI Engineering;
- enhance student knowledge and application of ACI Engineering disciplines; and
- encourage academic participation in ACI Engineering as part of undergraduate education.

Eligibility:

Any project work undertaken as part of the award of a professional undergraduate qualification relevant to Automation, Control and/or Instrumentation and reported in the form of an academic thesis shall be eligible.

Both individual student entries and student team entries are eligible for the award.

Prize:

The winner receives \$2000 and a framed certificate.

Entries:

Entries for the 2010 Automation, Control and Instrumentation Thesis Prize will close 15th December 2010.

For further information please visit the ACI website page:

http://www.engineersaustralia.org.au/committees-panels/automation-control-instrumentation/awards/awards_home.cfm

Or contact

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Call for Input for 25th Year Anniversary

The year 2011 will mark the 25th Anniversary of the National ACI Committee. Discussions are currently underway regarding how best to commemorate the occasion. Any ideas would be most welcome. Copies of any relevant photos or articles would also be most appreciated and can be forwarded to the committee administrator.

Editor's Post-script

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