

ACI newsletter

National Committee on Automation, Control and Instrumentation
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Automation, Control, and Instrumentation National Project Excellence Awards



Left to Right (M. Evans, Barry Keats, Mike Sargent)

Dr Michael Evans presented the biennial IEAust Project Excellence Award in ACI (Automation Control and Instrumentation) at the *M.A. Sargent Award Dinner* held in Hobart, 25 June 99. The Project Excellence Awards recognise outstanding applications of ACI, and are designed to encourage the application of 'best practice' ACI techniques to achieve greater productivity, more efficient use of resources including energy, and reduced emissions.

CAMMS Automation and Electrical Services was awarded the prize for their work in designing, manufacturing, and installing a state-of-the-art winery control and automation system for BRL Hardy's \$18M premium winery, Stonehaven Vineyards, at Padthaway,

South Australia. The Stonehaven Winery is the largest single new winery to be built in Australia in the last twenty years.

CAMMS's system gives the winemaker unprecedented control of the winemaking process, monitoring the production of wine from receiving the grapes until just prior to bottling. The control system is linked by a fibre optic network, which connects the programmable controllers, the SCADA system and the general computer system. This network is also linked to Hardy's Reynella head office, 350km via the Telstra-wide area fibre optic network.

n making this award the Committee acknowledges the outstanding contribution of this project to one of the world's most modern and fully automated wineries, which has been built at a time of unprecedented growth in the Australian Wine Industry. The use of automation in this value-adding export oriented industry, which has achieved great technical and commercial success in recent years, demonstrates the gains available to industries undertaking control and automation upgrades of this type.

CAMMS's project joins those of the inaugural 1997 prizewinners PCT, Perth, for their work on Stage 1 of the ERA Ranger Uranium Mine plant upgrade, and BHP Engineering and BHP Coated Steel, jointly, for the Springhill Coil Packaging and Handling Project, Port Kembla.

The committee was delighted by the quality of the submissions and the scale of the investment being made in advanced control. It was a very encouraging continuation of a new award program sponsored by the NCACI, and I would like to take the opportunity to thank my fellow selection committee members, Dr John Lear (Sydney), Andrew Telford (Melbourne), and Geoff Munday (Perth) for their efforts.

Dr Michael Evans
Chairman
NCACI National Project Excellence Award
Committee

The 1998 Undergraduate Thesis Prize



Left to Right (Nigel Hancock, Nigel Bennett, Mike Sargent)

(comprising a Medal, a Certificate and a cheque for \$1000)

The winner of the 1998 prize has finally been determined. Comparison of theses and projects is always difficult considering the range of Automation, Control and Instrumentation applications and with due regard to the varying amount of effort students can afford to devote to their project in competition with other subjects in their final-year. The Panel comprises

six members of the National Committee including two from academia and four from industry.

The winner is:-

Nigel Bennett, for the thesis entitled:

"The Development of a Semi Automatic Control for Explosive Charging in Underground Mining Operations", Curtin University of Technology, Western Australian School of Mines, under the supervision of Dr Elenora Widzyk-Capehart

The thesis investigates automation of blast hole charging in underground mining. The work highlights problems with current charging technology and develops some fundamental improvements, integrating aspects of automation, control, and instrumentation. It includes experimentation and engineering design, but is particularly noted for its clarity in dealing with the complexities of underground operation, as well as its innovative solutions to the man-machine interface design. The work is particularly important due to its potential both to improve the efficiency of Australian industry and to allow safer work practices in the mining industry.

A presentation of the 1998 Undergraduate Thesis Prize was held at the M A Sargent Medal Award Dinner in Hobart on 25 June 1999.

A Certificate of Commendation was awarded to John H Lloyd, for his thesis entitled "Plant Control using Programmable Logic Controllers" from the Faculty of Engineering and Surveying, University of Southern Queensland.

NCACI Committee Member Profile



Andrew Telford is the Victorian representative on the NCACI, although he still thinks of himself as a North Queenslander, having spent his formative years in Townsville. Possibly, his father's work with electrical things in the construction industry influenced his eventual decision to embark on a career in electrical

engineering. While still at high school he obtained a full amateur radio license and was always tinkering with electronics around the house.

He remained in Townsville to study at James Cook University, where he worked on a UHF communications project for his final year thesis. After completing a degree in Engineering in 1985 he side-stepped away from electronics and communications and commenced research under Professor John Moore at the Australian National University in the field of robust and adaptive control systems. He has fond memories of his time at the ANU, where he was

inspired by working closely with the staff, academic visitors, and other students. Of course these interactions extended to extracurricular activities on the volleyball court and ski fields.

After completing his PhD in 1989 he moved to Melbourne to take up a job with BHP's Melbourne Research Laboratories. The process control group at the MRL worked mainly in the Steel Division, focussing on providing customised control solutions using techniques such as model based control, optimisation, and adaptive control. He has also spent some time with a team examining the potential for agent-like control architectures both to simplify configuration and improve the robustness of complex processes. The group worked closely with metallurgists and other process experts, in projects ranging in size from small consulting jobs to multi-year team investigations.

Andrew has been fortunate to have had experience in all processes from iron-making through to metallic coating. More recently he has also had experience in coal and minerals processing, where the emphasis has been more on baseline tuning of the lower level control loops, rather than advanced control. Within BHP there are ongoing challenges in raising the general level of expertise in control tuning among the engineering fraternity, as well as bringing to the attention of management the tangible benefits of best practice ACI. We need somehow to encourage more graduates to follow a career path in ACI.

In the last few months he has transferred to BHP's Western Port works where he is taking on an ambitious project to demonstrate, jointly with Kvaerner Metals, an improved control strategy for the finishing mill of a hot strip mill. This will use multivariable robust control techniques, in particular mu-analysis, to control strip thickness, mass flow, and interst and tension. Process and product constraints across all stands of the mill will be monitored and controlled using a higher level predictive control module. This will be challenging given the fast process dynamics in a finishing mill.

Andrew lives in suburban Melbourne with his wife Heather and two daughters Laura (4) and Alexandra (2). He has no time to play golf and does not support any AFL football team. He does enjoy reading, music, cycling, squash, Italian cooking, and other diversions which keep him from painting the house. He also has responsibility for updating the NCACI Web pages (<http://www.ieaust.org.au/ncaci> or follow the links on the Electrical College page) and is keen to hear ideas on how the site can best serve the constituency.

Contact him by email at telford.andrew.aj@bhp.com.au or on 03 5979 6257.

Greetings to Brian...

It is a great pleasure to announce that Professor Brian D O Anderson of the Australian National University has been awarded the prestigious Giorgio Quazza Medal. The award reads: "To One of Today's Leading Scientists in the World of Automatic Control, Professor Brian D O Anderson, For His Comprehensive Contributions to Control Theory and His Leadership in IFAC".



The Giorgio Quazza Medal was presented to Brian at the Opening Session of the 14th IFAC World Congress which was held in Beijing from 5 - 9 July 1999.

On behalf of the Australian community of control engineers, the NCACI salutes Brian's extraordinary achievement.

Robert...

Professor Robert. R. Bitmead of the Australian National University has recently taken up his new post at the University of California, San Diego, where he will be heading the Dynamic Systems and Control Group of the Department of Mechanical and Aerospace Engineering.

Congratulations Bob! We wish you all the best in this new endeavour.

Even situated in America, Bob is going to keep his tight links with the Australian control community and will certainly keep collaborating with his mates in organising CDC 2000 which is to be held in Sydney, from 12-15 December 2000. For more details about this event please read below.

and Iven...

Professor Iven Mareels, Head of the University of Melbourne's Department of Electrical and Electronic Engineering, has been invited to deliver a semi-plenary lecture on Complex Dynamics in Adaptive Control at the European Control Conference - ECC '99. This will be held in the historic German city of Karlsruhe from 31 August until 3 September. Iven, bravo from all of us!

Afterwards: Information, Decision, and Control - IDC 99

Adelaide, Australia, 8th-10th February 1999



The '1999 Information, Decision and Control' conference at the Stamford Plaza Hotel in Adelaide, attracted over 170 scientists, engineers and mathematicians working across the disciplines of signal processing and communications, decision and control, and data and information fusion. There was strong international participation and 100 papers were delivered. Four off-conference tutorials were also held, an encouraging result for an event of this size.

Six keynote and plenary addresses focused on three of the critical technologies needed for the design and analysis of modern distributed information and decision systems, such as communication networks, distributed sensor networks, and large scale distributed control systems. Well known Australian researchers Professors Brian Anderson and Graham Goodwin, together with Professor Shankar Sastry, U California Berkeley, led the signal processing and control streams. Of particular interest was the panel session 'Future Systems Integration — The Grand Challenges' chaired by Prof. Rob Evans (General Chair) of The University of Melbourne with participation from leading figures in academia, defence, and industry.

DSTO and CSSIP were financial supporters of this event which was sponsored by the IEEE South Australia Section. Dr Ian Chessell, Director ESRL, DSTO, who opened the conference, stressed the Defence interest, "Modern military C3I systems represent challenging research opportunities for systems engineers, scientists and mathematicians... indeed the research to be discussed at IDC 99 is, I believe, central to Australia building an effective C3I system."

The post conference evaluation forms (40 returns) contained high praise for the conference organisation and the interdisciplinary focus with the mixture of parallel and plenary sessions... "the conference was unique in commingling workers in control and estimation/fusion... an outstanding achievement".

Support for IDC 99 exceeded all expectations (and nearly exceeded the capacity of the venue!) and has encouraged the organising committee to consider another meeting in the not too distant future.

Dr Michael Evans
Chair, Organising Committee IDC 99

Control Related Events in Australia in 1999/2000

In addition to two premier international conferences, the 39th IEEE Conference on Decision and Control — CDC2000 and the 5th IFAC/IEEE Symposium on Advances in Control Education — ACE 2000, the Australian control community will host many other distinguished conferences in 1999 and 2000. If you wish to learn more about these events please do so by using the contact details as follows:

1999

26-29 September 1999 The Chemeca '99, Newcastle
Ph: (02) 9290 3366
Fax: (02) 9290 2444

2000

4 - 7 December 2000 IEEE-PES/CSEE
International Conference on
Power Systems Technology,
POWERCON 2000, Perth,
Australia;

<http://www.ec.uwa.edu.au/~aips/powercon>

7 - 9 December 2000 The 6th IEEE International
Workshop on Variable
Structure Systems — VSS
2000, Gold Coast, Australia
<http://vss2000.cqu.edu.au>

12 - 15 December 2000 The 39th IEEE Conference
on Decision and Control —
CDC 2000, Sydney, Australia
<http://wwwsyseng.anu.edu.au/cdc2000/>

17 - 19 December 2000 The 5th IFAC/IEEE
Symposium on Advances in
Control Education — ACE
2000, Gold Coast, Australia
<http://www.gu.edu.au/centre/icsl/ace2000/>

Editors' Post-script

- **Discussion Forum:** Letters to the editors in response to any article in the newsletter will have the responses published in subsequent editions.
- **News of interest** to the Australian community of control engineers are most welcome.
- **A special issue** of the newsletter may also be worthwhile. Please submit a proposal.
- **Contributions** will be reviewed against the Mission Statement of the Committee when editing received material. The editors reserve the right to make changes.
- **Your calls** are always welcome.
- The Editors: Dr Ljubo Vlacic (ph: 07 3875 5024; email: L.Vlacic@me.gu.edu.au) and Ms Trish Grice (ph: 02 6270 6548; email: tgrice@eol.ieaust.org.au).

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