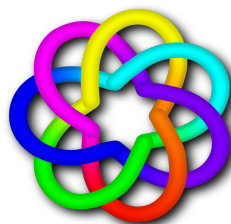


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Fourteenth Australasian User Interface Conference
(AUIC 2013), Melbourne, Australia,
Adelaide, Australia, 29 January – 1 February 2013

Ross T. Smith and Burkhard C. Wünsche, Eds.

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Preface

It is our great pleasure to welcome you to the 14th Australasian User Interface Conference (AUIC), held in Adelaide, Australia, January 29th to February 1st 2013, at the University of South Australia. AUIC is one of 11 co-located conferences that make up the annual Australasian Computer Science Week.

AUIC provides an opportunity for researchers in the areas of User Interfaces, HCI, CSCW, and pervasive computing to present and discuss their latest research, to meet with colleagues and other computer scientists, and to strengthen the community and explore new projects, technologies and collaborations.

This year we have received a diverse range of submission from all over the world. Out of 31 submitted papers, 12 papers were selected for full paper presentations and 6 were selected for posters. The breadth and quality of the papers reflect the dynamic and innovative research in the field and we are excited to see the international support.

Accepted papers were rigorously reviewed by the community to ensure high quality publications. This year we are excited to announce that all AUIC publications will now be indexed by Scopus (Elsevier) to help increase their exposure and citation rates.

We offer our sincere thanks to the people who made this years conference possible: the authors and participants, the program committee members and reviewers, the ACSW organizers, Scopus and the publisher CRPIT (Conference in Research and Practice in Information Technology).

Ross T. Smith

University of South Australia

Burkhard Wünsche

University of Auckland

AUIC 2013 Programme Chairs

January 2013

Programme Committee

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Dr. Raymond Choo

Local Arrangement Chair

Dr. Grant Wigley

Registration Chair

Dr. Jinhai Cai

Welcome from the Organising Committee

On behalf of the Organising Committee, it is our pleasure to welcome you to Adelaide and to the 2013 Australasian Computer Science Week (ACSW 2013). Adelaide is the capital city of South Australia, and it is one of the most liveable cities in the world. ACSW 2013 will be hosted in the City West Campus of University of South Australia (UniSA), which is situated at the north-west corner of the Adelaide city centre.

ACSW is the premier event for Computer Science researchers in Australasia. ACSW2013 consists of conferences covering a wide range of topics in Computer Science and related area, including:

- Australasian Computer Science Conference (ACSC) (Chaired by Bruce Thomas)
- Australasian Database Conference (ADC) (Chaired by Hua Wang and Rui Zhang)
- Australasian Computing Education Conference (ACE) (Chaired by Angela Carbone and Jacqueline Whalley)
- Australasian Information Security Conference (AISC) (Chaired by Clark Thomborson and Udaya Parampalli)
- Australasian User Interface Conference (AUIC) (Chaired by Ross T. Smith and Burkhard C. Wünsche)
- Computing: Australasian Theory Symposium (CATS) (Chaired by Tony Wirth)
- Australasian Symposium on Parallel and Distributed Computing (AusPDC) (Chaired by Bahman Javadi and Saurabh Kumar Garg)
- Australasian Workshop on Health Informatics and Knowledge Management (HIKM) (Chaired by Kathleen Gray and Andy Koronios)
- Asia-Pacific Conference on Conceptual Modelling (APCCM) (Chaired by Flavio Ferrarotti and Georg Grossmann)
- Australasian Web Conference (AWC2013) (Chaired by Helen Ashman, Michael Sheng and Andrew Trotman)

In addition to the technical program, we also put together social activities for further interactions among our participants. A welcome reception will be held at Rockford Hotel's Rooftop Pool area, to enjoy the fresh air and panoramic views of the cityscape during Adelaide's dry summer season. The conference banquet will be held in Adelaide Convention Centre's Panorama Suite, to experience an expansive view of Adelaide's serene riverside parklands through the suite's seamless floor to ceiling windows.

Organising a conference is an enormous amount of work even with many hands and a very smooth cooperation, and this year has been no exception. We would like to share with you our gratitude towards all members of the organising committee for their dedication to the success of ACSW2013. Working like one person for a common goal in the demanding task of ACSW organisation made us proud that we got involved in this effort. We also thank all conference co-chairs and reviewers, for putting together conference programs which is the heart of ACSW. Special thanks goes to Alex Potanin, who shared valuable experiences in organising ACSW and provided endless help as the steering committee chair. We'd also like to thank Elyse Perin from UniSA, for her true dedication and tireless work in conference registration and event organisation. Last, but not least, we would like to thank all speakers and attendees, and we look forward to several stimulating discussions.

We hope your stay here will be both rewarding and memorable.

Ivan Lee

School of Information Technology & Mathematical Sciences

ACSW2013 General Chair

January, 2013

CORE - Computing Research & Education

CORE welcomes all delegates to ACSW2013 in Adelaide. CORE, the peak body representing academic computer science in Australia and New Zealand, is responsible for the annual ACSW series of meetings, which are a unique opportunity for our community to network and to discuss research and topics of mutual interest. The original component conferences - ACSC, ADC, and CATS, which formed the basis of ACSW in the mid 1990s - now share this week with eight other events - ACE, AISC, AUIC, AusPDC, HIKM, ACDC, APCCM and AWC which build on the diversity of the Australasian computing community.

In 2013, we have again chosen to feature a small number of keynote speakers from across the discipline: Wen Gao (AUIC), Riccardo Bellazzi (HIKM), and Divyakant Agrawal (ADC). I thank them for their contributions to ACSW2013. I also thank invited speakers in some of the individual conferences, and the CORE award winner Michael Sheng (CORE Chris Wallace Award). The efforts of the conference chairs and their program committees have led to strong programs in all the conferences, thanks very much for all your efforts. Thanks are particularly due to Ivan Lee and his colleagues for organising what promises to be a strong event.

The past year has been turbulent for our disciplines. ERA2012 included conferences as we had pushed for, but as a peer review discipline. This turned out to be good for our disciplines, with many more Universities being assessed and an overall improvement in the visibility of research in our disciplines. The next step must be to improve our relative success rates in ARC grant schemes, the most likely hypothesis for our low rates of success is how harshly we assess each others' proposals, a phenomenon which demonstrably occurs in the US NFS. As a US Head of Dept explained to me, "in CS we circle the wagons and shoot within".

Beyond research issues, in 2013 CORE will also need to focus on education issues, including in Schools. The likelihood that the future will have less computers is small, yet where are the numbers of students we need? In the US there has been massive growth in undergraduate CS numbers of 25 to 40% in many places, which we should aim to replicate. ACSW will feature a joint CORE, ACDICT, NICTA and ACS discussion on ICT Skills, which will inform our future directions.

CORE's existence is due to the support of the member departments in Australia and New Zealand, and I thank them for their ongoing contributions, in commitment and in financial support. Finally, I am grateful to all those who gave their time to CORE in 2012; in particular, I thank Alex Potanin, Alan Fekete, Aditya Ghose, Justin Zobel, John Grundy, and those of you who contribute to the discussions on the CORE mailing lists. There are three main lists: csprofs, cshods and members. You are all eligible for the members list if your department is a member. Please do sign up via <http://lists.core.edu.au/mailman/listinfo> - we try to keep the volume low but relevance high in the mailing lists.

I am standing down as President at this ACSW. I have enjoyed the role, and am pleased to have had some positive impact on ERA2012 during my time. Thank you all for the opportunity to represent you for the last 3 years.

Tom Gedeon

President, CORE
January, 2013

ACSW Conferences and the Australian Computer Science Communications

The Australasian Computer Science Week of conferences has been running in some form continuously since 1978. This makes it one of the longest running conferences in computer science. The proceedings of the week have been published as the *Australian Computer Science Communications* since 1979 (with the 1978 proceedings often referred to as *Volume 0*). Thus the sequence number of the Australasian Computer Science Conference is always one greater than the volume of the Communications. Below is a list of the conferences, their locations and hosts.

2014. Volume 36. Host and Venue - AUT University, Auckland, New Zealand.

2013. Volume 35. Host and Venue - University of South Australia, Adelaide, SA.

2012. Volume 34. Host and Venue - RMIT University, Melbourne, VIC.

2011. Volume 33. Host and Venue - Curtin University of Technology, Perth, WA.

2010. Volume 32. Host and Venue - Queensland University of Technology, Brisbane, QLD.

2009. Volume 31. Host and Venue - Victoria University, Wellington, New Zealand.

2008. Volume 30. Host and Venue - University of Wollongong, NSW.

2007. Volume 29. Host and Venue - University of Ballarat, VIC. First running of HDKM.

2006. Volume 28. Host and Venue - University of Tasmania, TAS.

2005. Volume 27. Host - University of Newcastle, NSW. APBC held separately from 2005.

2004. Volume 26. Host and Venue - University of Otago, Dunedin, New Zealand. First running of APCCM.

2003. Volume 25. Hosts - Flinders University, University of Adelaide and University of South Australia. Venue - Adelaide Convention Centre, Adelaide, SA. First running of APBC. Incorporation of ACE. ACSAC held separately from 2003.

2002. Volume 24. Host and Venue - Monash University, Melbourne, VIC.

2001. Volume 23. Hosts - Bond University and Griffith University (Gold Coast). Venue - Gold Coast, QLD.

2000. Volume 22. Hosts - Australian National University and University of Canberra. Venue - ANU, Canberra, ACT. First running of AUIC.

1999. Volume 21. Host and Venue - University of Auckland, New Zealand.

1998. Volume 20. Hosts - University of Western Australia, Murdoch University, Edith Cowan University and Curtin University. Venue - Perth, WA.

1997. Volume 19. Hosts - Macquarie University and University of Technology, Sydney. Venue - Sydney, NSW. ADC held with DASFAA (rather than ACSW) in 1997.

1996. Volume 18. Host - University of Melbourne and RMIT University. Venue - Melbourne, Australia. CATS joins ACSW.

1995. Volume 17. Hosts - Flinders University, University of Adelaide and University of South Australia. Venue - Glenelg, SA.

1994. Volume 16. Host and Venue - University of Canterbury, Christchurch, New Zealand. CATS run for the first time separately in Sydney.

1993. Volume 15. Hosts - Griffith University and Queensland University of Technology. Venue - Nathan, QLD.

1992. Volume 14. Host and Venue - University of Tasmania, TAS. (ADC held separately at La Trobe University).

1991. Volume 13. Host and Venue - University of New South Wales, NSW.

1990. Volume 12. Host and Venue - Monash University, Melbourne, VIC. Joined by Database and Information Systems Conference which in 1992 became ADC (which stayed with ACSW) and ACIS (which now operates independently).

1989. Volume 11. Host and Venue - University of Wollongong, NSW.

1988. Volume 10. Host and Venue - University of Queensland, QLD.

1987. Volume 9. Host and Venue - Deakin University, VIC.

1986. Volume 8. Host and Venue - Australian National University, Canberra, ACT.

1985. Volume 7. Hosts - University of Melbourne and Monash University. Venue - Melbourne, VIC.

1984. Volume 6. Host and Venue - University of Adelaide, SA.

1983. Volume 5. Host and Venue - University of Sydney, NSW.

1982. Volume 4. Host and Venue - University of Western Australia, WA.

1981. Volume 3. Host and Venue - University of Queensland, QLD.

1980. Volume 2. Host and Venue - Australian National University, Canberra, ACT.

1979. Volume 1. Host and Venue - University of Tasmania, TAS.

1978. Volume 0. Host and Venue - University of New South Wales, NSW.