
Conferences in Research and Practice in Information Technology, Volume 139.

Copyright ©2013, Australian Computer Society. Reproduction for academic, not-for-profit purposes permitted provided the copyright text at the foot of the first page of each paper is included.

Editors:

Ross T. Smith
School of Computer and Information Science
University of South Australia
GPO Box 2471
Adelaide, South Australia 5001
Australia
Email: ross.t.smith@unisa.edu.au

Burkhard C. Wünsche
Department of Computer Science
University of Auckland
Private Bag 92019
Auckland
New Zealand
Email: burkhard@cs.auckland.ac.nz

Series Editors:
Vladimir Estivill-Castro, Griffith University, Queensland
Simeon J. Simoff, University of Western Sydney, NSW
Email: crpit@scm.uws.edu.au

Publisher: Australian Computer Society Inc.
PO Box Q534, QVB Post Office
Sydney 1230
New South Wales
Australia.

Conferences in Research and Practice in Information Technology, Volume 139.
ISSN 1445-1336.

Document engineering, January 2013 by CRPIT
On-line proceedings, January 2013 by the University of Western Sydney
Electronic media production, January 2013 by the University of South Australia

The Conferences in Research and Practice in Information Technology series disseminates the results of peer-reviewed research in all areas of Information Technology. Further details can be found at http://crpit.com/.
# Table of Contents

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

Preface .................................................................................................................. vii
Programme Committee ......................................................................................... viii
Organising Committee .......................................................................................... ix
Welcome from the Organising Committee ........................................................... x
CORE - Computing Research & Education ........................................................... xi
ACSW Conferences and the Australian Computer Science Communications .......... xii
ACSW and AUIC 2013 Sponsors ............................................................................ xiv

## Contributed Papers

Tangible Agile Mapping: Ad-hoc Tangible User Interaction Definition .................. 3
*James A. Walsh, Stewart von Itzstein and Bruce H. Thomas*

vsInk Integrating Digital Ink with Program Code in Visual Studio ....................... 13
*Craig J. Sutherland and Beryl Plimmer*

Supporting Informed Decision - Making under Uncertainty and Risk through Interactive Visualisation .............................................................. 23
*Mohammad Daradkeh, Clare Churcher and Alan McKinnon*

Metadata Manipulation Interface Design ................................................................. 33
*Stijn Dekeyser and Richard Watson*

Understanding the Management and Need For Awareness of Temporal Information in Email ................................................................. 43
*Nikash Singh, Martin Tomitsch and Mary Lou Maher*

An Online Social-Networking Enabled Telehealth System for Seniors A Case Study ......................................................................................... 53
*Jaspaljeet Singh Dhillon, Burkhard C. Wünsche and Christof Lutteroth*

Validating Constraint Driven Design Techniques in Spatial Augmented Reality ....................................................................................................................... 63
*Andrew Irlitti and Stewart von Itzstein*

Music Education using Augmented Reality with a Head Mounted Display ........... 73
*Jonathan Chow, Huoyang Feng , Robert Amor and Burkhard C. Wünsche*

A Tale of Two Studies ............................................................................................. 81
*Judy Bowen, Steve Reeves and Andrea Schweer*

Making 3D Work: A Classification of Visual Depth Cues, 3D Display Technologies and Their Applications ..................................................................................... 91
*Mostafa Mehrabi, Edward M. Peek, Burkhard C. Wünsche and Christof Lutteroth*

An Investigation of Usability Issues in AJAX based Web Sites .............................. 101
*Chris Pilgrim*

Determining the Relative Benefits of Pairing Virtual Reality Displays with Applications ................................................................................................................ 111
*Edward M. Peek, Burkhard C. Wünsche and Christof Lutteroth*
Contributed Posters

An Ethnographic Study of a High Cognitive Load Driving Environment .............................. 121
   Robert Wellington, Stefan Marks

Experimental Study of Steer-by-Wire and Response Curves in a Simulated High Speed Vehicle   123
   Stefan Marks, Robert Wellington

3D Object Surface Tracking Using Partial Shape Templates Trained from a Depth Camera for Spatial
Augmented Reality Environments ................................................................. 125
   Kazuna Tsuboi, Yuji Oyamada, Maki Sugimoto, Hideo Saito

My Personlal Trainer - An iPhone Application for Exercise Monitoring and Analysis............. 127
   Christopher R. Greeff, Joe Yang, Bruce MacDonald, Burkhard C. Wünsche

Interactive vs. Static Location-based Advertisements .................................................. 129
   Moniek Raijmakers, Suleman Shahid, Omar Mubin

Temporal Evaluation of Aesthetics of User Interfaces as one Component of User Experience .... 131
   Marlene Vogel

Author Index  ............................................................................................................. 133
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

Chairs

Ross T. Smith, University of South Australia, Australia
Burkhard C. Wünsche, University of Auckland, New Zealand

Web Chair

Stefan Marks, AUT University, New Zealand

Members

Mark Apperley, University of Waikato, New Zealand
Robert Amor, University of Auckland, New Zealand
Mark Billinghurst, HITLab, New Zealand
Rachel Blagojevic, University of Auckland, New Zealand
Paul Calder, Flinders University, Australia, Australia
David Chen, Griffith University, Australia
Sally Jo Cunningham, University of Waikato, New Zealand
John Grundy, Swinburne University of Technology, Australia
Stewart Von Itzstein, University of South Australia, Australia
Christof Lutteroth, University of Auckland, New Zealand
Stuart Marshall, Victoria University of Wellington, New Zealand
Masood Masoodian, University of Waikato, New Zealand
Christian Müller-Tomfelde, CSIRO, Australia
Beryl Plimmer, University of Auckland, New Zealand
Gerald Weber, University of Auckland, New Zealand
Burkhard C. Wünsche, University of Auckland, New Zealand
Organising Committee

Chair
Dr. Ivan Lee

Finance Chair
Dr. Wolfgang Mayer

Publication Chair
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 additional 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 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
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.


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.
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.
1998. Volume 20. Hosts - University of Western Australia, Murdoch University, Edith Cowan University and Curtin University. Venue - Perth, WA.
1995. Volume 17. Hosts - Flinders University, University of Adelaide and University of South Australia. Venue - Glenelg, SA.
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.
1987. Volume 9. Host and Venue - Deakin University, VIC.
1986. Volume 8. Host and Venue - Australian National University, Canberra, ACT.
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.