



25th annual
CITRENZ
conference

e d i t o r s
MIKE LOPEZ & MICHAEL VERHAART

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w a y s

PROCEEDINGS

The logo for CITRENZ 2012 is displayed on a dark blue square background. The word "CITRENZ" is written in white, uppercase, sans-serif font. To the right of "CITRENZ" is a small blue square containing the year "2012" in white, uppercase, sans-serif font.

CITRENZ 2012

**Proceedings of the 3rd
Annual Conference of
Computing and
Information
Technology Education and
Research in New Zealand**

Incorporating the 25th Annual
Conference of the National
Advisory Committee on Computing
Qualifications

Christchurch New Zealand

8th-10th October 2012

Mike Lopez

Dr Michael Verhaart

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Computing and Information Technology Research and Education New Zealand (CITRENZ) was formed as an organisation in 2010 following a review of the role of the National Advisory Committee on Computing Qualifications (NACCQ).

The National Advisory Committee on Computing Qualifications was formed in 1988.

CITRENZ provides help and support to member institutions in the development, teaching and quality assurance of courses and programmes, from certificate through degree to postgraduate levels, in the field of Computing and Information Technology.

CITRENZ also supports academic staff in several different ways, such as national workshops, research seminars, APL, moderation, the publishing of a journal, and also by organising this annual conference.

This conference is an output of the Research and Professional Development Focus Group.

CITRENZ activities and a digital version of these proceedings are available from <http://www.citrenz.ac.nz>

The philosophy of the conference is the encouragement and support of new, emerging and established researchers in a safe environment while encouraging excellence and academic discourse.

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Editors

Mike Lopez: Christchurch Polytechnic Institute of Technology

Dr Michael Verhaart: Eastern Institute of Technology

Theme

The conference contains papers in the following areas under the theme “Forging New Pathways”:

- Computing education
- Computing practice
- Computing research

Full papers (Quality Assured)

Full papers are double blind refereed on submission by at least three independent reviewers and accepted modified or rejected. An editorial panel reviews final versions. They may be rejected or returned for modification at that point.

In keeping with its supportive mission, the conference uses a system of paper proposals which are reviewed and guidance given to content, tone and structure of papers before they are formally submitted to be double blind refereed.

Poster papers

An A1 poster is displayed at the conference along with two pages in the proceedings.

Online

These conference proceedings, along with those since 2000, are available online at <http://www.citrenz.ac.nz/index.php/proceedings-pacit>

Reviewers

Michael Andrews	Manakau Institute of Technology
Mehdi Asgarkhani	Christchurch Polytechnic Institute of Technology
Dr. Sue Chard	Whitireia Polytechnic
Alison Clear	Christchurch Polytechnic Institute of Technology
Assoc Prof Tony Clear	Auckland University of Technology
Dr. Steve Corich	Eastern Institute of Technology, Hawkes Bay
Dr. Paul Dechering	Eastern Institute of Technology, Hawkes Bay
Dr. Kathy Egea	University of Queensland
Dr. Emre Erturk	Eastern Institute of Technology, Hawkes Bay
Allan Fowler	Wairariki Polytechnic
Shirley Gibbs	Lincoln University
Patricia Haden	Otago Polytechnic
Kim Hagen-Hall	Eastern Institute of Technology, Hawkes Bay
Alison Hunter	Manakau Institute of Technology
Dr. Donald Joyce	
Mike Lopez	Christchurch Polytechnic Institute of Technology
Dobriila Lopez	Christchurch Polytechnic Institute of Technology
Professor Sam Mann	Otago Polytechnic
Kathryn MacCallum	Eastern Institute of Technology, Hawkes Bay
Chris McCarthy	Christchurch Polytechnic Institute of Technology
Diane McCarthy	Christchurch Polytechnic Institute of Technology
Trevor Nesbit	University of Canterbury, Christchurch
Amitrajit Sarkar	Christchurch Polytechnic Institute of Technology
Dr. David Skelton	Eastern Institute of Technology, Hawkes Bay
Lesley Smith	Otago Polytechnic
Assoc Prof Michael Verhaart	Eastern Institute of Technology, Hawkes Bay
Dr. Jacqueline Whalley	Auckland University of Technology

2012 Awards

- **Student Poster**
 - Honourable mention: Calteau, Coombs, Smith, Mann
 - Honourable mention: Maclachlan, Bradley, Smith, Mann
 - Runner up: Sime, McEwan, Cross, Smith, Mann
 - **Best: Cattermole**
- **Staff Poster**
 - Honourable mention: Tongariro, Fakasi'i'eiki
 - Honourable mention: Burrell, Melchert
 - Honourable mention: Mann, Angelo, Gallagher
 - Runner up: Robertson
 - **Best: Lance, Oliver, Sarkar**
- **Collaborative Research**
 - Honourable mention: de Vries, McCarthy, Nesbit, Mack, Reilly
 - Runner up: Wingreen, Tennant, Nesbit, Moorman
 - **Best: Lopez, Lopez, Simpson**
- **Educational Innovation**
 - Honourable mention: Smith, Haden, Mann
 - Honourable mention: Verhaart, Hagen-Hall
 - Runner up: Lopez, Lopez, Simpson
 - **Best: Nesbit, Martin**
- **Best Paper**
 - Honourable mention: Mann, Smith, Regan
 - Honourable mention: Sarkar, Oliver, Lopez, Lance
 - Runner up: Nesbit, Martin
 - **Best: Lopez, Lopez, Simpson**