



## NZCSRSC 2012

The 10th New Zealand Computer Science Research Student Conference (NZCSRSC2012) was held at the Uni of Otago 11–13 April, the first to be held in Scarfieland. It was the 20th Anniversary of NZCSRSC.

There were over 70 attendees from seven universities, two companies and two professional organizations. We had three keynotes, three workshops, 24 paper presentations and eight poster presentations.

The keynotes began with a fascinating talk on the power of static electricity by **Josh Bailey**, a network engineer from Google. Then **Andrew Robins**, Test Manager at Tait Communications, showed us how to test mission-critical applications such as search and rescue digital radio systems, with possible catastrophic consequences to both client and company. **Nicolás Erdödy**, the CEO of Open Parallel, discussed how to turn tech ideas into viable businesses.

Three workshops provided the opportunity to discuss burning issues. **Holger Regenbrecht** shared insights about the research phase in the lifecycle of a commercial project; **Ian Witten** helped us improve our presentation skills in academic papers; and **Tim Bell** advised us about time management.

In the Product Demo Session, students showcased commercial developments based on their research projects. **Hamza Bennani** showed a smartphone application that recognizes product barcodes and automates the purchase and payment processes. **Surangika Ranathunga** demonstrated an online MMORPG game featuring intelligent AI agents that can interact and co-ordinate with each other.

Central to the conference is the presentation of student work. There were 24 papers and 8 posters, covering a broad range of topics ranging from information retrieval to user interface and telecommunications. The presentation quality improves from year to year. The best poster award went to Otago’s **Gonzalo Nido** for “Dynamic properties of a long-term potentiation gene regulatory network,” and the best paper award went to **Faisal Iradat** from the Institute of Business Administration, Pakistan, for “Load based approach for backoff process modelling and queuing analysis in IEEE 802.11-based wireless LANs”.

We are grateful for sponsorship from Google Australia, IET, Pingar and Upstart. We would also like to thank the local contacts at the universities, the conference organizing committee chairs, and our Departmental Administrator **Kaye Saunders**, who spent countless hours behind the scenes to make this conference happen. We feel privileged to receive guidance from our conference mentor Anthony Robins, and the Computer Science and Information Science HODs **Brendan McCane** and **Michael Winikoff** respectively. Finally we would like to say a big thank you to the father of the conference, Ian Witten.

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The most important function of NZCSRSC is to provide an environment that facilitates interaction and networking between the participants, and with Industry. NZCSRSC also promotes the opportunities of ICT-related careers and projects to the wider public, including people outside our field.

Next year, the conference will be held at Waikato, its birthplace. We are looking forward to see what is in store for us!

### Kai-Cheung Leung

On behalf of the NZCSRSC 2012 organizing committee

### Future NZCSRSCs

.....another excellent NZCSRSC! This 10<sup>th</sup> conference followed 20 years after the inaugural one in 1992. After running sporadically for the first several years, six years ago we turned the organization over to students. Since then the conference has been held annually (students seem to be better at getting these things together than staff!), at Waikato, Canterbury, Auckland, Victoria, Massey, and this year at Otago.

I warmly congratulate **Kai-Cheung Leung** and his team for a highly successful and impeccably organized conference. There were over 60 attendees from all major NZ universities, an excellent turnout – especially considering that Otago is not centrally positioned. As usual, the standard of papers and presentations was very high. It was a distinctly Otago event, with scarfie scarves being presented to the keynote speakers and workshop organizers, and charming groups of young Scottish and Irish dancers at the conference dinner – with live bagpipes. **Tim Bell** from Canterbury, **Robert Amor** from Auckland, and I constitute an informal steering committee for NZCSRSC.

*Ian Witten*

## Canterbury

### News

In April we finally moved back into our offices, which have been repaired following the Feb quake. For the last year we've been sharing space with our postgraduate students – it has been a great thing socially, with the main difficulty being a lack of private meeting spaces.

**R. Mukundan** has recently had his book “Advanced Methods in Computer Graphics – with Examples in OpenGL” published by Springer (London) in both electronic and hardcover formats. The book provides an in-depth coverage of methods used in character animation, mesh processing, surface design and collision detection. Mukundan has been teaching computer graphics courses at both upper undergraduate and graduate levels for several years. The principal objective of the book is to serve as a reference text for graduate students and researchers in the field of computer graphics.

More info:

<http://www.springer.com/computer/image+processing/book/978-1-4471-2339-2>

**Moffat Matthews** is leading a group that have developed the “UCanAsk” project, which is now being piloted in lectures. It allows students to interact live with the lecturer by feedback and quiz questions through devices with browsers (i.e. smartphones and laptops).

**Andy Cockburn** was quoted in the Listener article “Charge of the tech brigade” (31 March 2012).

**Krys Pawlikowski** has been invited by the Technical Committee of the ICCE 2012 in Hue, Vietnam, 31 July 31- 4 August, 2012, to give a special, half day tutorial on “Quantitative discrete-event computer simulation as a credible paradigm of scientific investigations”. The conference is technically co-sponsored by IEEE and IEEE ComSoc, AP-S, Photonics, IEICE (Japan), IEICE ES and CS and KICS (Korea). After the conference, Krys has been asked to give a lecture at the Dept. of Communications Engineering, in School of Electronics and Telecommunications, at Hanoi Uni of Science and Technology.

More info: [www.hut-icce.org](http://www.hut-icce.org)

**Akaroa2** <[www.akaroa.canterbury.ac.nz](http://www.akaroa.canterbury.ac.nz)>, our unique automated controller of simulation, has had a number of registered users from that department.

### Computer Science and NCEA

Last year marked the introduction of “real” computer science to the NCEA curriculum at year 11 (3rd to last year of school). This year it is being introduced to year 12, and next year to year 13. 1,459 students registered for the Computer Science concepts standard last year, and counting the programming

papers, 3147 in total registered for one of the new Programming and Computer Science. An important role of CS departments has been to help support and train teachers as they prepare to teach material that they aren't familiar with. Last Dec/Jan Google sponsored two 2-day “CS4HS” workshops at Canterbury and Victoria, attended by 80+ teachers, and these are to be repeated at the end of 2012. For more details on this, there is a paper reviewing the first year at:

<http://db.grinnell.edu/sigcse/sigcse2012/Program/viewAcceptedProposal.pdf?sessionType=paper&sessionNumber=176>

### Scholarships

UC Doctoral Scholarship

**Philip Quinn**

College of Engineering Women's Scholarship

**Saghar Izadpanah**

### Arrivals and Departures

**Kourosh Neshatian** (formerly a post-doc at Victoria Uni, Wellington) has been appointed as a lecturer, starting in May 2012.

**Walter Guttman** (formerly from Ulm Uni, Germany) has been appointed as a lecturer, starting around Jun 2012.

**Amali Weerasinghe, Thomas Young, Nick Brettell, Moffat Mathews** and **Clare McLennan** have appointments as fixed-term lecturers.

**Warwick Irwin** has left to work for Google Australia. He will remain involved with the department through an adjunct position.

**Blair McMaster** (head programmer) has retired, and is now working on his own research projects in the department.

**Alex Tobeck** (admin) has left to work for a local company. The department is currently interviewing for a lecturer in Software Engineering and a senior tutor.

### Awards

Five of our students, **Daniel Schramm, Myse Elmadani, Joel Harrison, Joey Scarr** and **Will Gittoes**, were awarded Google internships in Sydney over the last summer.

**Richard Lobb** has been awarded a Uni of Canterbury Teaching Award.

**Joey Scarr** will receive a Best Paper Award for “Improving Command Selection with CommandMaps” at CHI 2012.

**Stephen Fitchett** will receive an Honourable Mention Award for “AccessRank: Predicting what users will do next” at CHI 2012.

**Philip Quinn** has won a competitive internship to work with **Shumin Zhai** at Google Mountainview.

The 2011 James Chen Annual Award for Best UMUI Journal Article was received by **Brent Martin, Antonija Mitrovic, Kenneth R. Koedinger** and **Santosh Mathan** for “Evaluating and improving adaptive educational systems with



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learning curves”, in User Modeling and User-Adapted Interaction.

**Tanja Mitrovic** was awarded the Asia-Pacific Society for Computers in Education (APSCE) Distinguished Researcher Award, which was presented at their annual conference ICCE 2011 in Thailand in Dec 2011.

**Tanja Mitrovic** has been voted as President-elect of the International Artificial Intelligence in Education society, for the period 2013-2015.

## Visitor

**Ben du Boulay**, Professor Emeritus, Uni of Sussex, UK, is currently visiting on an Erskine fellowship.

## PhD Theses

**Jaco Fourie**—*The Application of Harmony Search in Computer Vision*

**Susanne Tak**—*Understanding and Supporting Window Switching*

## MSc Theses

**Ahmed Qaisi**—*Network Forensics and Log Files Analysis: A Novel Approach to Building a Digital Evidence Bag and Its Own Processing Tool*

**Sang Myung Lee**—*Sub-Cubic time algorithm for the k-disjoint maximum subarray problem*

Tim Bell

## Waikato

### News

**Paul Monigatti** was selected by Transpower to give a presentation at the NZ Wind Energy Conference in April, for work on the management of electric vehicle charging and using the distributed storage capacity of their batteries to counter the intermittent generation output of wind farms.

**Shane Alcock** was interviewed by a journalist from Radio New Zealand in response to the news that the first “third strike” file sharing notice had been issued in NZ. The interview was on the topic of Shane's research into the effects of the file sharing law on Internet traffic patterns in NZ.

**Judy Bowen** and **Steve Reeves** are Guest Editing an issue of ISSE (Innovations in Systems and Software Engineering, published by Springer, and with close ties to NASA), based on two workshops in the FMIS (Formal Methods for Interactive Systems) series which took place in 2009 and 2011. **Steve** is also Guest Editing (with **John Derrick**, Sheffield and **Eerke Boiten**, Kent) an issue of Formal Aspects of Computing based on the Refine 2011 workshop held in Limerick last year.

**The Global Game Jam** ran from 27-29 Jan went well. Once again **Beverley Laundry's** t-shirt design stars on the home

page of the GGJ. There were 45 participants in 15ish teams. This year there were games uploaded that really had game play - a significantly better outcome than 2011.

More info: [www.globalgamejam.com](http://www.globalgamejam.com)

**Brian Bulas** and **Joe Honeyfield** were among the first five people to graduate with Waikato's new Tauranga-based computer science degree. Offered in partnership with Bay of Plenty Polytechnic, the new BSc programme allows Polytechnic students who complete the two-year Diploma in Applied Computing to pathway through to their third year with the UoW and graduate with the BSc, with a major in Computer Science and specialization in Applied Computing.

We have received five year official accreditation from The IPENZ Board for the SE BE (along with the four other subjects in the BE from FS&E).

## Scholarships

BuildIT Postdoctoral Fellowship.

**Craig Schock**

*Using wikipedia to build conceptual models of software systems from their source code.*

UoW International Doctoral scholarship

**Michael Rinck**

*Detecting and tracing object evolution.*

## Book

**Polly Cantlon** and **Alice Lo** have a chapter in the book *Judging a Book by its Cover (or does modernist form follow function?)*

## Appointments

**Doris Jung** began work as a Senior Research Programmer and will be providing support for research in Wikipedia Mining.

**Anna Huang** has taken up an academic position in the Data and Text Mining Group, Yangtze Uni, Hubei Province, China.

**David Milne** has taken a 3-year Postdoc position in the ICT Group at CSIRO in Marsfield, Sydney, Australia

## Grants

**Shaoqun Wu** and **Ian Witten** received a grant from Education NZ, from the New Zealand-China Tripartite Fund, which helps to initiate and facilitate new tripartite partnerships. This will support the “Three Brothers Project” between Yunnan, Fudan and Waikato Universities on computer assisted language learning.

**Richard Nelson** won one of three grants in the Internet NZ Community Projects Funding Round for his project “Mapping the New Zealand Internet” (WAND Research Group). This project will set up the infrastructure required and then map the NZ Internet infrastructure in as much detail as possible.



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## Awards

**Marc McHardy** won a Design Institute of New Zealand award for his interactive poster, developed for his Waikato degree show project. McHardy's innovation was showcased in two magazines and on TVNZ 7's Ad Show. As a direct result he secured a job as an interactive designer with Wellington new media design firm Click Suite.

**Tony Smith** was awarded a Faculty Teaching Excellence Award for 2011.

**Olena Medelyan, David Milne, Cathy Legg** and **Ian Witten's** article "Mining meaning from Wikipedia" has received Elsevier's 2012 Most Cited Paper Award for the *International Journal of Human-Computer Studies*. Papers for this distinction are determined solely based on the highest number of cites, excluding self-citations, received for all journal articles published between the years 2009 and 2011.

## Seminars

**Bob Doran**, CS Dept. Uni of Auckland. May.  
*Alan Turing and the Computing Engine Turing's achievements in practical computing*

**Ralf Heese**, Humboldt Uni and Freie Uni, Berlin. Apl.  
*Resource-centred storage of RDF graphs: clustering triples for efficient retrieval*

**Beatriz López**, Uni of Girona, Catalonia, Spain. Mar.  
*In the edge of optimization and learning for resource allocation*

**Ricard Gavaldà**, Uni Politècnica de Barcelona (UPC BarcelonaTech). Mar.  
*Adaptive Scheduling on Power-Aware managed Data-Centers using Machine Learning*

**Fiona Polack**, York Centre for Complex Systems Analysis & Dept. of Computer Science, Uni of York, U.K. Mar.  
*Fit-for-purpose complex systems simulation*

**Stefan Kramer**, Johannes Gutenberg Uni, Mainz. Mar.  
*New Algorithms for Graphs and Small Molecules Exploiting Local Structural Graph Neighborhoods and Target Label Dependencies*

**Alexander K. Seewald**, Uni of Colorado, USA. Jan.  
*Image Data Analysis in *H.sapiens* and *C.elegans**

**Puakea Noglemeier**, Uni of Hawaii, Manoa. Feb.  
*Crowd Sourcing of OCR using Duolinguat*

**Adrian Paschke**, Freie Uni, Berlin. Feb.  
*Industry applications of the Semantic Web*

## Visitors

**Paty Cortez**, PhD student Uni of Aizu, Japan. Mar-May.

**John Brine**, Uni of Aizu, Japan. Mar.

**Beatriz López**, Uni of Girona, Dept of Electrical, Electronics and Automatic Engineering, Catalonia, Europe. Mar.

**Stefan Kramer**, Johannes Gutenberg Uni, Mainz. Mar.

**Alannah Fitzgerald**, English Language Centre, Durham Uni, UK. Jan.

**Adrian Paschke**, Freie Uni, Berlin. Feb.

**Ralf Heese**, Freie Uni, Berlin. Mar-Apl.

**Elisabeth Andre** and **Thomas Rist**, Ausberg Uni of Applied Sciences, Germany. Feb.

**Saturnino Luz**, Trinity College Dublin. Apl.

## MSc Thesis

**Appu Jose**—*Evolution of documents: information and data objects*

**Fanhua Zeng**—*Using output codes for two-class classification problems*

**Maxime Rouast**—*Television in digital library*

**Jinjin Ma**—*Parameter tuning using Gaussian processes*

## Victoria

### News

#### Vic students help speed up Firefox web browsing

Victoria's School of Engineering and Computer Science has partnered with Mozilla Firefox's Auckland office to carry out research projects, some of which will help improve the performance of the world's second-most popular browser.

The collaboration was forged by **Alex Potanin**, Senior Lecturer in Software Engineering, and internationally acclaimed New Zealander **Robert O'Callahan** who set up and runs Mozilla Firefox's New Zealand arm. The Auckland Mozilla office concentrates on hardware acceleration or improvements that allow browsers to quickly load big, graphic-rich websites. Recent graduate **Jan Larres**, who came to Victoria from Germany to complete his Master's degree, has conducted the latest project with his year-long research effort focused on accurate testing of the Firefox browser's speed.

#### ECS Graduate Launches Book on Video Gaming

Like many teenage boys, **Pippin Barr** spent time playing games in arcades, rented SEGA games, and bought a PlayStation when it became available. However, it wasn't until he embarked on a PhD at Victoria Uni that he realised he could build a serious career around gaming. He majored in Philosophy and Computer Science, and encouraged by his academic mentor, he went on to do his PhD research on human values in gameplay, graduating in 2009. He is now a lecturer at Copenhagen Uni, where he teaches video-game design and programming, a position he describes as his "dream job", despite the amount of marking involved.

#### ECS Hosts Successful Annual Programming Challenge 4 Girls

On the 23 Nov 2011, ECS and VUW hosted 51 Year 10 girls from around the Wellington Greater Region as part of the annual Programming Challenge 4 Girls competition. The girls



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worked in pairs to complete a series of challenges developed by AUT in Alice. At the same time, teachers attended a Professional Development workshop to learn about electronics and programming.

ECS graduate students and staff helped run the challenge: **Harsha Raja, Shahida Jabeen, Bing Xue, Sharon Gao and Monique Damitio** assisted in the labs, while Luke Frogley, **Roma Klapaukh, Ian Welch** and **Stuart Marshall** ran the workshop for teachers.

## Summer Camp for Secondary School Teachers

A summer camp was held for 32 secondary school teachers from the 24-26 Jan 2012.

The objective was to bring together ICT teachers from around the country and inform them about the new NCEA units that will be coming into effect in 2012. **Peter Andrae** (Victoria Univ) and **Tim Bell** (Uni of Canterbury) ran the event. The Uni of Canterbury hosted a similar event in December, which was attended by around 50 teachers.

## Scholarships

Victoria PhD / Doctoral Scholarships (Nov 2011)

**Jonathan Hart**  
**Timothy Jones**  
**Syed Mir Alavi**  
**Yifei Wang**  
**Santosh Kumar**

Victoria PhD / Doctoral Scholarships (Mar 2012)

**Peter Raj**  
**Henry Williams**  
**Saqib Saleem**  
**Abdul Wahid**  
**Rasheswori Rajkumari**  
**Saeed Mirghasemi**

## Staff Changes

### Retirements

**John Hine** resigned as Head of the School of Engineering and Computer Science at the end of 2011. However, he has returned on contract as Dean of Engineering and Director of e-Research. John's current research focus is e-Science and e-Research and the use of ICT to enable researchers to work more efficiently and effectively.

**Pavle Mogin** first joined Victoria Uni in 2010 as a lecturer in the School of Mathematics, Statistics and Operations Research, before moving to the School of Engineering and Computer Science as a senior lecturer in 2009. Pavle has been involved with database research for over 30 years. His current primary research interest is in Relational and XML (Extensible Markup Language) database constraints.

### New Head of School

**Dale Carnegie** has replaced **John Hine** as Head of the School

of Engineering and Computer Science. Dale joined Victoria Uni in 2008 as an Associate Professor in the School of Chemical and Physical Sciences before moving to the School of Engineering and Computer Science as an associate professor in 2009. His research interests are in the area of intelligent control of electromechanical systems.

### Visiting lecturer

**Marco Servetto** joined the School of Engineering and Computer Science in Jan 2012.

His main research interests are Metacircular Compile time meta-programming, Class Composition languages, advanced type systems, and Java-like Object Oriented Programming Languages.

### Resignation

**Petra Malik** resigned in Jan 2012. Petra joined the School of Engineering and Computer Science as a lecturer in 2008. Her research interests include formal methods, especially in formal software specification, verification, and synthesis techniques.

## Seminars

**Kay Chen Tan**, National Uni of Singapore

*Evolutionary Multi-objective Algorithms for Practical Problem-Solving*

**John Hosking**, Uni of Auckland

*Research and Teaching with Impact Outside Academia*

**John Zhen**, Victoria Uni

*High Efficiency Class-D RF Amplifier for Mobile NMR Applications*

**James Noble**, Victoria Uni

*Grace: a New Object-oriented Educational Programming Language*

**Shaw Wei Cheeo**, Victoria Uni

*The Development of a High Performance Digital RF Transceiver for NMR*

## PhD Theses

**Rohitash Chandra**—*Problem Decomposition and Adaptation in Cooperative Neuro-evolution*

## MSc Theses

**James Bebbington**—*Learning Actions that Reduce Variation in Objects.*

**Ankit Chopra**—*Association Control Based Load Balancing in Wireless Cellular Networks using Preamble Sequences.*

**Yi-jing Chung**—*Improving Accuracy and Efficiency of Hand Gestures on Multi-touch Devices.*

**Constantine Dymnikov**—*OwnKit: Ownership Inference for Java.*

**Koshy John**—*Social Cloud for Public e-Research*

**Jan Larres**—*Performance Variance Evaluation on Mozilla Firefox.*



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**Nan Liu**—*Performance evaluation of routing metrics for community wireless mesh networks*

**Neil Ramsay**—*An Information Visualisation Tool for Emergency Management*

Amanda Holdaway

## Otago CS

### News

The 10th New Zealand Computer Science Research Student Conference (NZCSRSC) was held at the Uni of Otago, from 11-13 April 2012. This is the premier postgraduate conference promoting ICT research in New Zealand. The main aim of this conference is to strengthen New Zealand's ICT community by bringing students together to share their research and to establish contacts that will support future careers. The general chair was our PhD candidate **Kai-Cheung Leung**.

Graduate **Pete Bruns** has created the best Tantrix playing robot, based on his COSC490 project. This robot, called 'Monte', successfully defeated the previous best bot in a game lasting 27 hours. The software is based on the Monte Carlo method.

### Appointments

**Yawen Chen** joined the department as a Lecturer in Feb. Yawen's interests include resource optimization and performance evaluation in computer networking and computer architecture, optical networks, interconnection networks, green computing and cloud computing.

**Shawn Martin** joined the department as a Lecturer in Jan. He researches in areas such as the use of computational techniques to analyze and understand large, high-dimensional scientific datasets, mostly in bioinformatics, cheminformatics, and computational biology; he also has particular interests in dimension reduction, computational topology, and computational geometry.

In Feb Lecturer **Ali Knott** was promoted to Associate Professor.

### Visitors

**Vincent Vatter**, Dept. of Mathematics, Uni of Florida. Jan.

**Nik Ruskuc**, School of Mathematics, Uni of St Andrews, Scotland. Jan.

**Simon McCallum**, Gjøvik Uni College, Norway. Feb.

**Ed Angel**, Department of Computer Science, Uni of New Mexico. Mar.

**Ignas Kukenys**, Research Engineer, NextWindow). Apl.

### Award

Our PhD candidate **Sheetal Jadhav** won a best paper award at the PDCAT 2011 conference in South Korea. Her paper was

called "Performance Evaluation of Quality of VoIP in WiMAX and UMTS"<sup>6</sup>

### Seminars

**Shawn Martin**, Computer Science, Uni of Otago.  
*Molecular Design using Chemical Fragments*

**Bob Allen**, Victoria Uni of Wellington.

*Models for Scientific Research Reports and for Digital History*

**Franz Brandenburg**, Faculty of Informatics, Uni of Passau.  
*Stacks, Queues and Deques and their Representation as Graphs*

**Surangika Ranathunga**, Information Science, Uni of Otago.  
*Increasing Awareness of Intelligent Agents in 3-D Virtual Communities*

**Mariusz Nowostawski**, Information Science, Uni of Otago.  
*Building a mobile- and web-based data acquisition system: lessons learned.*

Maria Pozza - Faculty of Law, Uni of Otago.

*The Outer Space Treaty (1967) Arms Control Provisions*

### PhD Theses

**Lech Szymanski**—*Learning and Internal Representation in a Neural Network.*

**Byung-Hyun Yu**—*Distributed Shared Memory Protocols.*

### MSc Theses

**David Alexander**—*Click Logs as a Source of Data for Evaluating the Quality of Hypertext.*

Robert Pollock

## Massey

### News

#### Travels

**Stephen Marsland** returned from his sabbatical trip to Europe, where he spent six months as visiting fellow at a variety of European uni's including Vienna, Paris, Imperial College, and Cambridge.

**Hans Guesgen** is off to the Uni of Osnabrueck in Germany as part of a RSNZ/DAAD research collaboration in May-Jul. As part of the same collaboration, **Thomas Wiemann** from the Uni of Osnabrueck is currently visiting us, and working on fitting planes and triangular meshes to kinect data.

#### Teaching

Last year we made the decision to prioritise computational thinking in our first year papers, and changed language to Python as part of this. Students seem to be reacting very favourably to this.



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## Staffing changes

**Elizabeth Kemp** is retiring in Jun. We wish her all the best for her retirement.

We have recently advertised a job as a lecturer or senior lecturer, and received 125 applications for the position. We will be interviewing shortlisted candidates over the next couple of weeks.

## PhD Theses

**Jevon Wright**—*A Modelling Language for Rich Internet Applications*

**Norliza Katuk**—*Learning Experience in Dynamic and Non-Dynamic Curriculum Sequencing Systems*

## MSc Theses

**Paul Johnson**—*Beat: A Visualizing Debugger for Concurrent, Shared Memory Java Programs*

Stephen Marsland

## Computer Science at Massey Albany campus

### News

Congratulations to **Ken Hawick** who has been elected a Fellow of the Institute of Physics. Ken has been kept busy leading a group (including **Martin Johnson**, **Chris Scogings** and **Daniel Playne**) that was awarded a capital equipment grant for GPUs enabling the connection of 8 GPUs to the same CPU for the first time. The group is now experimenting with the latest 1500 core GPUs.

The Albany Complex Systems and Simulations Group recently hosted a visit by **Fiona Polack** of the Centre for Complex Systems Analysis at the Uni of York, UK. Fiona presented a seminar on “Fit-for-purpose complex systems simulation.”

**Daniel Playne** attended the Australasian Computer Science Week (ACSW), and presented a paper on work on the new GPU set-up to the Australasian Symposium on Parallel Distributed Computing (AusPDC) stream.

PhD student **Mitchell Johnson** recently developed a Kinect demo that enables direct interaction with a running complex system simulation.

**Ken Hawick** received funds for two summer internships and supervised **Victor du Preez** and **Brad Pearce** in building complex systems simulation Apps for Android tablets.

### PhD Thesis

Congratulations to **Teo Susnjak** who has recently handed in his PhD thesis “Efficient Boosted Ensemble-based Machine Learning in the Context of Cascaded Frameworks”. He is now

employed as a software developer at Compac Sorting Ltd, as part of the Ministry of Science innovation internship.

### Latest PhD students

**Tim McMullen** who is working on 3-D rendering and advanced visualisations (using web-based technologies), supervised by **Ken Hawick** and **Chris Scogings**.

**Michael Zhao** who is working on astronomical databasing for real time astronomy (for the MOA project) supervised by **Ian Bond** and **Winston Sweatman**.

Chris Scogings

## Auckland

### News

#### 32nd birthday!

2012 is the department’s 32nd birthday (significant in binary terms...), celebrated so far with a birthday picnic, giant cake and tee shirts.

**Robert Amor** and **Georgy Gimel’farb** were both promoted to Professor.

**Robert Amor** has been elected as Editor-in-Chief for the Journal of Information Technology in Construction (ITcon); an ERA A-ranked journal.

**Arron Judson** has been appointed to the role of Director of the Centre for Software Innovation. Arron graduated from the Uni of Canterbury in 1987 with a BSc in Operations Research. He has since worked for a number of companies, including Toshiba, Ericsson, Geovector.

**The Gibbons Lectures Series** 2012 is underway. This year the series is titled “The Turing Legacy”, with lectures held on 26 April, 3 May (webcast only), 10 and 17 May. All welcome. More info:

[www.cs.auckland.ac.nz/our\\_department/Gibbons\\_Lectures/](http://www.cs.auckland.ac.nz/our_department/Gibbons_Lectures/)

### Appointments, Staff changes

We welcome **Giovanni Russello** and **Sebastian Link** to the academic staff, and **Rachel Blagojevic** as a postdoctoral fellow.

We welcome **Wannes van der Mark**, **Arturo Jiménez** and **Aniruddh Gandhi** to the research programming team. Also **Sarah Henderson**, who replaces **Aaliya Ahmed** while on maternity leave.

We welcome **Arron Judson** as the new Director of the Centre for Software Innovation.

We farewell **Brian Carpenter** and **John Morris** from the academic staff.

## Awards, Scholarships etc

**Christof Lutteroth** won a Dean's Award for Teaching Excellence

**Mark Wilson** successfully applied for a Seelye Charitable Trust Fellowship for Professor Matthew Jackson from the Dept. of Economics, Stanford Uni.

**Joseph Heled** was awarded a Vice-Chancellor's Prize for Best Doctoral Thesis in 2011-

## Seminars and Events

**Myra Cohen**, Uni of Nebraska, Lincoln, USA.

*Automated GUI Interaction Testing: Incorporating Event Context*

**Jürgen Wohlfeil**, German Aerospace Center (DLR, Berlin).  
*Monocular on-road pose estimation and detection of nearby vehicles*

**Nevil Brownlee**, Uni of Auckland.

*Understanding n-way Network Traffic Flows*

**Shiraz Bhalla** and **Nikhil Agnihotri**, UIET, Panjab Uni, Chandigarh, India.

*Visual content-based video indexing and obstacle detection for blind people*

**Gonzalo Perez**, TU Cordoba, Argentina.

*Unscented Kalman Filter for Monocular Visual SLAM*

**Sebastian Prenna**, TU Cordoba, Argentina.

*Detection, Categorization and Recognition of Road Signs*

**Pablo Garonne**, TU Cordoba, Argentina.

*Content-based retrieval of scenes in traffic-related video data*

**Jacques Patarin**, Uni of Versailles, France.

*The Secret Letters of Marie-Antoinette*

**Wolfgang Stuerzlinger**, York Uni.

*Is 'Iron Man' Right? Re-Investigating 3D User Interfaces*

**Barry G. Blundell** FBCS, AUT.

*3D: Redefining Illusion and Reality*

**Mohan Kankanhalli**, National Uni of Singapore.

*Design Issues in Multi-Camera Systems*

**Atrei Kankanhalli**, School of Computing, National Uni of Singapore.

*Deriving Value from IT-enabled and Open Innovation*

**Mutsuhiro Terauchi**, Hiroshima International Uni, Japan.

*Utilization of line paintings on roads*

**Diana Kirk**, UoA/AUT.

*Modelling software practices*

**Alan Blackwell**, Uni of Cambridge.

*Rethinking the user experience of creative programming*

**Ralf Haeusler**, Uni of Auckland.

*Confidence measures for stereo vision*

**Burkhard Wuensche**, Uni of Auckland.

*Novel Interface Technologies using Consumer-Level Webcams*

**At the Auckland Computer Science Theory Colloquium:**  
**Alexander Gavryuskin**, Dept. of Computer Science, Uni of Auckland and Uni of Irkutsk, Russian Federation.

*Computable models of small theories*

**Paul Denny**, Uni of Auckland.

*Using virtual achievements to motivate students in an online learning activity*

**Danny Wei**, MSc, Uni of Auckland.

*Quantative Quality Model For Gesture Based User Interfaces*

**Dong Ming Chui**, Faculty of Science and Technology, Uni of Macau.

*Intelligent e-Home Healthcare Platform for Pervasive Health Monitoring*

**Booma Devi Sekar**, Faculty of Science and Technology, Uni of Macau.

*Similarity and Complexity Analysis – Theory and its Application on Biological Sequences of Heart Sound for Cardiovascular Disease Prognosis*

**Kashif Nisar**, Uni Utara, Malaysia.

*VoIP over WLANs as Next Generation Networks*

**Beryl Plimmer**, Uni of Auckland.

**Gerald Weber**, Uni of Auckland.

*Signing on the Tactile Line: A Multimodal System for Teaching Handwriting to Blind Children*

*Form- and Fact-Based Modeling*

**John Hosking**, College of Engineering and Computer Science, ANU / Uni of Auckland.

*Ambient Awareness of Build Status in Collocated Software Teams*

## Visitors

**Bok Suk Shin**, Busan National Uni – visiting **R Klette**

**Jeremy R. Cooperstock**, McGill Uni, Montreal

– visiting **J Morris**

**Stefan Bottcher**, Uni Paderborn Fakultät V, Germany

– visiting **G Dobbie**

**Jürgen Wohlfeil**, German Aerospace Center (DLR) – visiting **R Klette**

**Alan Blackwell**, Uni of Cambridge – visiting **B Plimmer**

**Karl Svozil**, Vienna Uni of Technology – visiting **C Calude**

**Terauchi**, Hiroshima Uni – visiting **R Klette**

**Myra Cohen**, Uni of Nebraska – visiting **G Dobbie**

**Sven Hartmann**, Clausthal Uni of Technology, Germany

– visiting **S Link**

**Kashif Nisar**, InterNetWorks Research Laboratory, School of Computing, College of Arts and Sciences at Uni Utara Malaysia – visiting **U Speidel**

**Johannes Muller**, Uni of Leipzig, Germany – visiting **C Lutteroth**

## PhD Theses

**Mehnaz Adnan** – *A Clinical Information Management & Authoring Support System for Collaborative Care in Practical Management* (supervisor **Jim Warren**).

**Imran Khaliq** – *Special Topics on Automata, Structures and Games* (supervisor **Bakh Khoussainov**).

**Alfonso Gastélum-Strozzi** – *Smoothing Particle*



*Hydrodynamics parallel implementation for numerical modelling of solid-fluid interactions.* (supervisor **Patrice Delmas**).

**Muhammad Asif Naeem**—*Efficient Joins to Process Stream Data* (supervisor **Gill Dobbie**).

Heather Armstrong

## Lincoln

### News

**Walt Abell** and **Mark Anderson** attended the New Zealand Network Operators Group (NZNOG) conference held in Christchurch in Feb. This was well attended by both local and international network providers and academics. Not surprisingly, a number of papers looked at the impact of the Christchurch earthquakes on network providers and users. Walt followed the conference by travelling to Waikato Uni to discuss possible joint projects with the WAND networking group.

**Keith Unsworth** visited the School of Mathematical Sciences, Uni Sains Malaysia (USM) for three weeks in Jan. The research visit allowed him to discuss research interests in Computer Aided Geometric Design (CAGD) with staff and research students. Keith also conducted a 2-day workshop on the application of Matlab to problems in CAGD. He gave research seminars at the main campus in Penang, and at USM's Dental School on the east coast of the mainland at Kota Bharu. The Dental School is expanding its use of imaging techniques in its work, and future collaboration is planned, enhanced by a Memorandum of Understanding between Lincoln's Dept. of Applied Computing and the Dental School, School of Mathematical Sciences and Dept. of Computer Science at USM.

### Scholarships

**Di Wang** an undergraduate Software and Information Technology Student took part in the NeSI Summer of eResearch, mentored by **Stuart Charters** to develop an online catalogue for the Lincoln Uni Entomology Museum Type Collection.

**Matt Altumari** a Software and Information Technology Graduate undertook an MSI Canterbury Earthquake Studentship working with Frizzell Agricultural Electronics and mentored by Stuart Charters to automate the processing of data from remote moisture sensors to provide irrigation reports to farmers.

### Awards and Prizes

**Stuart Charters** and **Keith Unsworth** have been awarded \$10,000 from InternetNZ to fund an internship to work on a Digital Archiving Project relating to the Christchurch

Earthquake. The project will use distributed computing to calculate a sunlight index for pre-Quake Christchurch.

Keith Unsworth

## AUT

### News

**SKANZ 2012 Conference** – “Pathways to SKA Science in Australasia” was the title for the February SKANZ 2012 Conference and there were invited and contributing talks and posters from many of the participants. Topics were all related to the Square Kilometre Array (SKA) mega project and ranged from the radio astronomical precursor science to the computing and networking demands anticipated from the huge data streams.

### Microsoft Imagine Cup

Congratulations to **Team Mobile Eye** from AUT for taking out the 2012 Microsoft Imagine Cup. It was an intense competition this year, with four very strong teams making it through to the finals, Thought-Wired, Connect, Aura and Mobile Eye. Those in attendance agreed that the competition was massive – and that Microsoft Imagine Cup is the premier student competition in New Zealand. **Jade Tan** (Graphic Design major) is a passionate graphic design student from AUT Uni. **Aakash Polra** (Team Captain): Aakash has completed his B.Math.Sc. (Honours) and B.Eng.Tech. from AUT Uni. **In-Hwan Kim** (Software Engineering) is studying Software Engineering at the Auckland Uni.

More info: <http://www.aut.ac.nz/news/aut-news/2012/may/aut-uni-students-win-microsoft-imagine-cup>

### Scholarships

#### SCMS PhD Full Scholarships

**The Anh Do**—*Automated Adaptive Program Verification*

**Waqar Hussain**—*Requirements Change Management in Global Software Development*

**Md. Akbar Hossain**—*Optimisation of Spectrum Handoff Latency in Cognitive Radio Networks*

**Bing Huang**—*Game Theory, Models of Beliefs and Applications to Financial Economics*

**Doug Hunt**—*Automated identification of sporting activities using simple, wearable transducers and domain knowledge*

**Sripirakas Sakthithisan**—*High Speed Data Stream Mining using Forest of Decision Trees*

**Richard Liu**—*Evolutionary Adaptability of Behaviour-based Control of Multi-robot Motion Coordination*

**Janet Tong**—*The Cultural Aspects of Learning Software Engineering*

**Bilal Raza**—*Framework for Global Software Engineering (GSE) process assessment and improvement*

## Appointments & Departure

**Stephan Thorpe** has been appointed as a fixed Deputy Head of School.

**Jairo Gutierrez** has been appointed as a fixed term lecturer.

**Stefan Schliebs** has been appointed as a fixed term lecturer.

**Muhammad Naeem** has been appointed as a fixed term lecturer.

**Andy Connor** departed in Feb 2012.

## Awards and Prizes

The recipient of the Kordia SKA Scholarship for 2012 is **Boris Feron**. His Masters research is on the topic of "SKA Real-Time Data Processing for Radio Astronomy".

**William Liu** has been awarded two grants (2012 Teaching and Learning Fellow grant and LATENT grant) to support the Learning and Teaching Fellowship project on Green and Smarter computing.

## SCMS PhD Fees Awards

**Jacqui Finlay**—*Search Based Software Engineering for Project Success*

**Andrew Zimmer**—*Computer-Assisted Diagnosis and Therapy for Children with Asperger Syndrome*

**Seth Hall**—*Mobile augmented reality systems using location-based information*

**Frederik Schmidt**—*Iterative and Incremental Search-Based Software Project Management*

**Ofosuhene Okofrobour**—*Apenteng Modelling the spread of AIDS in Ghana*

**Md. Zulfikar Hossain**—*Testing a theory of cognitive mapping using a mobile robot in an outdoor environment*

**Michael Bosu**—*A systematic investigation of the extent of change in metrics data during software systems evolution*

**Mahmoud Mahmoud**—*Software architecture and implementation of a scalable real-time data-streaming pipeline for eVLBI correlation and imaging*

**Abdul-Lateef**—*Balogun An Ensemble Approach to Geospatial state space estimation*

**Xinyu Hu**—*Real-time Object Recognition and 3D Reconstruction for Computer Vision*

**Raneetha Abeywickrama**

## Seminars

**Farnon Ellwood**, Uni of Cambridge.

*Beetles in the Mist*

**Cecilia Alicia Aguilar**, Digital Solutions Specialist, Cengage Learning.

*Cengage Learning - Digital Solutions*

**Alexander Gavruskin**, Uni of Irkutsk, Russian Federation.

*Computable models of small theories*

**Anuj Bhowmik**, SCMS, AUT.

*Equilibria in Economies with Asymmetric Information*

**Waqar Hussain**, SCMS, AUT.

*GRCM: A Model for Global Requirements Change Management*

**Tom Bowden**, CEO, Healthlink.

*View of the Health IT sector in NZ*

**Atreyi Kankanhalli**, School of Computing, National Uni of Singapore.

*Deriving Value from IT-enabled and Open Innovation*

**Mohan S. Kankanhalli**, School of Computing, National Uni of Singapore.

*Design Issues in Multi-Camera Systems*

**Reinhard Klette**, Uni of Auckland.

*Vision Based Driver Assistance*

**Abdul Sattar**, Griffith Uni.

*Local Search for Computationally Hard Constraint Satisfaction Problems*

**Colm Fitzgerald**, Oxford Uni.

*Time domain simulations for floating structures*

**John Graves**, AUT.

*SlideSpeech: Present Directly to Video Using Text-to-Speech*

**Leonid Gurvits**, JIVE - Joint Institute for VLBI in Europe.

*VLBI News from Europe*

## Visitors

**Kashif Nisar**, Uni Utara, Malaysia.

Advanced research in the field of VoIP and Video over wireless networks.

**Farnon Ellwood**, Uni of Cambridge.

Visiting **Robin Hankin** to discuss on-going collaboration activities.

**Mohan S Kankanhalli**, National Uni of Singapore (NUS)

.Carried out on-going research on surveillance, forensics and security.

**Atreyi Kankanhalli**, National Uni of Singapore (NUS).

Worked with **Weiqi Yan** on-going research activities.

**Abdul Sattar**, Griffith Uni.

Worked with **Wai Yeap**.

**Leonid Gurvits**, Head of Space Science and Senior Astronomer at the Joint Institute for VLBI in Europe (JIVE), the Netherlands, visited the Institute for Radio Astronomy and Space Research for three weeks over summer. There is a MoU between AUT and JIVE to encourage joint research projects and this visit further advanced the collaboration.

*Saide Lo*