

## Otago CS

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### NZ Computer Science Research Students' Conference

The 5th New Zealand Computer Science Research Student Conference (NZ CSRSC) took place at Waikato University from 10<sup>th</sup> -13<sup>th</sup> of April 2007. More than 70 graduate students and staff members from all NZ universities participated in sessions on a range of Computer Science relevant topics. The program also included interesting workshops, invited talks and company presentations.

The talks and posters were of very high quality, and all four keynote talks were exceptionally good. The invited speakers were Craig-Nevill Manning (Google New York), Nigel Scott (Park Road Post), Tyrone McAuley (Sidhe Interactive) and Ian Foster (Computation Institute at Argonne National Laboratory and the University of Chicago). The conference was excellent and the overall standard exceeded that of many international conferences.

The conference was held at the Te Kohinga Marama Marae on the Waikato campus, which served as a home for many of the guest students. Social events, such as the Kawa Powhiri, a hangi, a trip to the Waingaro Hot Springs and pub crawls, created a friendly and relaxed atmosphere. Students gained experience in how research conferences are run, became familiar with each other's projects, created research partnerships and made new friends.

Congratulations to Moffat Mathews (University of Canterbury) for winning the Best Presentation Award and Andrea Schweer (University of Waikato) for winning the Best Poster award.

More information about the conference and the photo gallery is available here:

<http://www.cs.waikato.ac.nz/nzcsrsc2007/>

Olena Medelyan

### News

Funding has been awarded for preparations for the use of our new building. A committee is to consider the adaptations required. For the first time, all staff and all labs will be housed together. The move is expected to take place from December 2007.

The first of our papers for the Oman Bachelor of Information Technology degree were delivered on time.

### Research

Graphics and Vision Group:  
**Marie-Paule Cani** is currently working in the Graphics Lab.

Theory of Computing Group:  
 Planning is under way for the 2007 meeting of the Australasian Conference on Combinatorial Mathematics and Combinatorial Computing which is to be hosted by the group in December 2007.

### Appointments

**Brendan McCane** took over as Head of Department in January 2007. **Ian McDonald** retired both as Head and from the department and was farewelled at a very well-attended function in April.

**Justin Teare** started work as our Technician early in the year.

**Simon McCallum** and **Parviz Najafi** left the department in November 2006.

**Sui-Ling Ming-Wong**, manager of the Graphics lab, left after seven years to start a new life in California.

**Peter Vlugter** returned as Research Fellow for Ali Knott.

### PhD Theses

**Rountree, Nathan**,—*Initialising Neural Networks with Prior Knowledge*

**Trotman, Andrew**—*Searching and Ranking Structured Documents*

Robert Pollock

## Waikato

### News

#### Building Research Capacity in Strategically Relevant Areas

The decision on the BRCSRA (Building Research Capacity in Strategically Relevant Areas) proposal, submitted jointly by Auckland and Waikato on behalf of all the universities to the Tertiary Education Commission early in March, has been delayed.

Some areas of the proposal are being changed to meet the requirements of the TEC. The management structure is being reconsidered. TEC have also indicated that they would like to see support more focussed on emerging researchers, including PhD and post-doctoral positions.

A new proposal is being prepared with a decision expected on the 31 August, 2007.

#### CHI-NZ 2007

The HCI Group will be hosting CHI-NZ 2007, the 8th Annual Conference of the NZ ACM Special Interest Group on Human-Computer Interaction. The conference will be held 1 - 4 July 2007, on the Waikato Campus in Hamilton. <http://www.cs.waikato.ac.nz/chinz2007/>

### Appointments

**Tony McGregor** became Head of Department from 1st February 2007, taking over from Geoff Holmes who acted in this position during a one year interregnum.

**Simon Laing** commenced as a Computer Graphics Design Lecturer on 16 April, 2007, returning to Waikato University from the Wanganui School of Design. Before that he was part of the WICeD team. One of his main interests at Waikato will be in interactive design.

### Seminars – visitors

**Richard Harris**, Massey University, January.  
*Network Planning - Modelling and Dimensioning of IP networks.*

**Michael Haller**, Upper Austria University of Applied Sciences for an organization meeting of the Leonardo Project partners, February. *The Office of Tomorrow and Experiments with Next Generation.*

**Weimin Zheng**, Tsinghua University, China. February.  
*A Bioinformatic Grid in China.*

**Syed Faisal Hasan**, University of Otago. February.  
*Congestion control for streaming media.*

**Chris DiBona**, Google, Mountain View CA, February.  
*Open Source at Google.*

**Lucy Ren**, Northwest A & F University, February.  
*Chinese Greenstone.*

**Georg Wittenburg**, Freie Universität, Berlin. March.  
*Wireless Sensor Networks (WSNs).*

**Mitchel A Potter**, Naval Research Laboratory, USA. March. *Robustness in Teams of Autonomous Robots.*

**Ian Toyn**, University of York U.K. April.  
*Formal Validation of Hierarchical State Machines against Expectations.*

**Alan Noble and Will Blott**, Google, Australia. April.  
*Informal talks on Google Apps for Edu and Google Research Grants.*

**Marc Kirchner**, University of Heidelberg. December.  
*A light at the end of the funnel? Data analysis in Proteomics mass spectrometry experiments.*

### Book

The first book for industry test engineers about model-based testing, *Practical Model-Based Testing: A Tools Approach*, by **Mark Utting** (Waikato) and **Bruno Legard** (France) was published by Morgan Kaufmann at the end of 2006.

The book focuses on the mainstream practice of functional black-box testing and covers different styles of models, especially transition-based models (UML state machines) and pre/post models (UML/OCL specifications and B notation). The steps of applying model-based testing are demonstrated on examples and case studies from a variety of software domains, including embedded software and information systems.

At Waikato, the book is being used as the textbook for a new Level-4 paper on Model-Based Testing.

### Scholarships

TEC Top Achiever Scholarship

**David Milne:** *Combining Thesauri For Interactive Query Expansion*

Hillary Scholarships

**Ngaire Ackerley:** *BCGD Graphic Design*

**Vina Aurellia:** *BCGD Badminton*

**Ben Bartels:** *BCGD Hockey*

**Mary Faber:** *BCGD Graphic Design*

**Adam Harvey:** *BCGD (Hons) Film, Screen&Media*

**Stanley (Ben) Hill:** *BSc Computer Science - Basketball*

2006 NZCS Tertiary Scholarship Winners:

**Beverley Rogers** **Karl Hendrikse**

**Brook Novak** **Matthew Whyte**

**James Foulds** **Sarah Armstrong**

**Scott Thompson**

## Masters Theses

**Cleland, Ben**—*Reinforcement learning racecar control*

**Qin, Yinghao**—*Close-coupled interfaces*

**Xu, Chengdong**—*An eclipse environment for Z*

**Shi, Haijian**—*Best-first decision tree learning*

**Liu, Zhiwei**—*Sensor network*

## PhD Theses

**McPherson, John**—*Co-ordinating knowledge to improve optical music recognition*

**Chou, Lin-Yi**—*Hierarchical hidden Markov Model for information extraction*

**Hawthorn, Daniel**—*Designing effective interfaces for older users*

## Lincoln

### News

This year the suite of qualifications in Software and Information Technology are being taught for the first time. Two new subjects, one in software engineering and the other in web development, are being offered at the 300 level.

The number of students enrolled in our undergraduate programmes is still declining. This is largely, but not entirely, due to the decrease in students from mainland China. We were hoping that the redevelopment of our degrees would result in enhanced numbers in 2007. Despite enhanced recruiting efforts this has not happened as yet.

Two masters' students, **Yanbo Deng** and **Yuan Tian**, represented the Applied Computing Group at the Fourth NZ Computer Science Research Students' Conference held recently.

### Appointments and Resignations

**Mark Anderson** has been appointed as Technical Tutor for the Applied Computing Group. Mark has a long association with Lincoln University. He first studied horticulture here in the 80s before returning, as a mature student, to study applied computing in 2002. He replaces **Florian Weingartner** who held the position for five years. Flo has moved to a technical support position at Landcare Research here in Lincoln.

### Book

**Clare Churcher**, *Beginning Database Design: From novice to professional* was published by Apress, Berkeley, California.

## Visitors

**Emma Lejk** from the University of Northumbria, Newcastle-Upon-Tyne visited in April. Emma was visiting a number of institutions in NZ. She held informal discussions with staff at Lincoln on the management of undergraduate group projects. She also sat in on some group activities in the 300 level analysis and design class.

## Awards

**Clare Churcher** was awarded one of the two Excellence in Teaching Awards given out by Lincoln University in 2007.

The Applied Computing Group has received funding from the FutureinTech Visiting Industry Professional Scheme. Our industry professional, **Dr. Paul Ashton**, is helping with the development of new subject COMP332 Web Development.

## Masters Thesis

**Robinson, Daphne**—*Development of Educational Software for Learning Equation Solving.*

Theresa McLennan

## AUT

### News

In February 2007, the Schools of Computer and Information Sciences and Mathematical Sciences were merged to form a new School – Computing and Mathematical Sciences. The SCMS moved into new premises around the Easter break and are in the AUT Tower, just across the road from the Auckland Town Hall.

### Research Grants

Technology New Zealand, Technology for Industry Fellowship in conjunction with Bisco Ltd. \$90k award to **Andy Connor** under grant number BISC0605 to support **Wilson Siringoringo** in his PhD work, *Multiobjective Optimisation of Building Layouts.*

In 2006, **Krassie Petrova** and **Jacqui Whalley** were recipients of a research grant from the Wyn Hoadley Chancellor's, each awarded by AUT Women on Campus for 2007.

## MCIS Theses/Dissertations

**Wilson Siringoringo**—*An Algorithm for component layout subject to real world constraints*  
**Sangeetha Kutty**—*Embedding constraints into association rules mining*  
**Jinjie Hu**—*Gene Selection Based on Consistency Modelling, Algorithms and Applications*

## Visitors

**Sippakarn Kassawat** and **Sangnapa Hirunmutraporn**, Information and Computer Management Department Commerce and Management Faculty, Prince of Songkla University, Thailand. 16-30 March.

**Miroslav Lovric**, McMaster University, Canada visited the School of Computing and Mathematical Sciences from 8 to 11 May and gave a very thought provoking talk about *Mathematics Textbooks as a Potential Source of Misconceptions*. The seminar was organised by the Computing and Mathematics Education Research Group (CMERG).

## Appointments

**Ching Lin** as Senior Lecturer, February 2007  
**Yun Sing Koh** as Lecturer, February 2007  
**Barry Blundell** as Senior Lecturer, June 2007

## Sabbatical

**Sergiy Klymchuk** was on sabbatical at Wismar University, Germany from June 2006 to January 2007. He produced 13 refereed research outputs during the period of his sabbatical: 1 book, 1 chapter in a book, 2 papers in international journals, 5 papers in conference proceedings (4 international and 1 national), 4 seminar presentations at universities in Singapore, Czech Republic, Germany and United Arab Emirates.

*Stephen MacDonell*

## Massey

### News

It seems likely that the computer science group will be extended by one member of staff in Palmerston North, and possibly more in Wellington as Massey integrates the Information Systems group in the College of Business into our College of Science Institute. This will mean that we cover databases, XML, and related topics in addition to our current teaching and research. We are looking forward to the chance of working more closely with this group, and hope to have more news in time for the next newsletter.

Our BE in Software Engineering continues to run well.

## Scholarships

We have secured student scholarships and summer positions with several local, national, and international companies. We were pleased to see so many of our ex-students arriving to graduate in person during May.

## Seminars

After a period in abeyance we are now running CS group seminars on a bi-weekly basis with follow-up discussions in the staff club bar. Two of the recent talks have been PhD students preparing for their 12 month continuation viva, and both of them are now confirmed as PhD students—congratulations to **Luofeng (Frank) Xu** (working on data mining) and **Hiba Mustafa** (working on e-learning).

Another seminar was given on modelling vehicular traffic flow by **Rui Jiang** from the University of Science and Technology of China, who was visiting **Ruili Wang** for a few weeks, funded by the Massey University International Visitors' Research Fund.

## Conferences

As the (Northern hemisphere) summer conference season comes upon us, many members of staff are adding to their frequent flyer miles, including **Stephen Marsland**, who is presenting an invited talk on “numerical methods for shape analysis” at a SAMSU workshop in the USA, and has managed to combine it with other conferences and workshops for a 6 week round trip. He has also been invited to present a paper at a workshop on modelling habituation in Vancouver in August. **Hans Guesgen** organised and chaired a special track on spatio-temporal reasoning at the 20th International FLAIRS conference in Key West, Florida, in May, where he also presented two papers on his recent research work. **Catherine McCartin** gave a presentation at the Bertinoro Computational Biology Meeting, and **Jens Dietrich** and **Eva Heinrich** presented papers at Australian conferences. **Ruili Wang** is currently away exploring academic linkages with Chinese universities.

## PBRF Results

In common with everybody else in New Zealand academia we awaited our PBRF results impatiently, hoping for a significant improvement over 2003. Our optimism was rewarded with a fantastic result—counting only our current members of staff in Palmerston North we were very pleased to see that our average of 4.54 puts us in a solid position to build our research potential for the future. We are planning to use this to improve our profile within New Zealand, and look forward to improving even more next time.

*Stephen Marsland*

## Canterbury

### News

#### NZ Computer Science Research Students' Conference

Huddled at Auckland airport amongst our tea scraps at 10pm Friday night, awaiting our delayed flight, our tired yet excited voices could be heard over the drone of the airport as we reminisced about our time at the conference. Four days of meeting with fellow researchers from across the country, listening to cutting edge research, being motivated by keynote speakers, and presenting our ideas and receiving feedback injected us with much needed enthusiasm to help us continue in our mostly solitary research lives. The tremendous hospitality from the Waikato group, right from the powhiri to the organisation of almost every aspect of our stay, made it an enjoyable experience. We discussed what we had learnt from the practical tutorial sessions, about the new ideas from others' research that we could incorporate into our work, and about general lessons learnt. Having been invited to run the next conference, we began to envision it, and the drive for the next conference was born, right there on the terminal floor.

It's now over four weeks since the conference, and although real life has kicked in, the enthusiasm still continues. We are in contact with many other researchers we met; as a direct result, the Intelligent Computer Tutoring Group at UC had a visitor from the Digital Libraries group in Waikato last week, with the aim of sharing knowledge and possible collaboration. Meanwhile, a group of UC students are running a feasibility study for NZCSRSC 2008 and we are awaiting news regarding funding. If all goes well, the eyes of the computer (academic and industrial) world will again focus on the showcasing of the cream of NZ computer science research, but this time in Canterbury (April 2008). We look forward to seeing you all there!

*Mofatt Mathews/Amali Weerasinghe*

#### Postgraduate Diploma in Science 2007 (Computer Security and Forensics)

The New Zealand Department of Education and the University of Canterbury have approved a new course of study in the area of Computer Security and Forensics. This diploma has been introduced in order to provide specialised study for those students with an interest in areas such as computer security, security management, cryptography, computer forensics and related areas. While most postgraduate courses are based upon a broad range of papers, this course is targeted at students who wish to specialise more specifically in these areas of computing.

Although other teaching institutions have individual papers in security, this course of study is the only one of its kind in Australasia and addresses specific needs of the industry at a time when security is a topic of significant importance in our society. Semester 1 papers include Wireless and Mobile IP Security (COSC 407), Identity and Access Management (COSC 417), Computer Forensics and Cyber crime (COSC 425), Information Security Management (COSC 430). Semester 2 consists of Security Fundamentals (COSC 436), Secure Software (COSC 424), Information Warfare (COSC 429) and Security Forensics Project (COSC 419).

A full description of this course of study is available for download at:

<http://www.cosc.canterbury.ac.nz/open/students/intending/pgforensics.html>

For further information, please contact Ray Hunt, [ray.hunt@canterbury.ac.nz](mailto:ray.hunt@canterbury.ac.nz).

**Call for participation - Workshop on ASPIRE** (an authoring system which supports tertiary teachers in developing adaptive, knowledge-based e-learning environments)

The Intelligent Computer Tutoring Group invites participation in a full-day workshop to be held on 13 June, 2007 at the University of Canterbury (9am - 5pm). The workshop will present ASPIRE, an authoring system which supports tertiary teachers in developing adaptive, knowledge-based e-learning environments for their courses. The workshop will introduce ASPIRE and its functionality, and the participants will have hands-on opportunities to use it and develop a small e-learning environment. The ASPIRE project has been funded by two grants from TEC.

There is no fee for the workshop. Travel expenses will be covered for about ten participants, so please make sure you contact the team early to ensure funding. More information about the workshop is available at <http://www.ucl.canterbury.ac.nz/workshops.shtml>

Lunch and refreshments will be provided. There is a maximum of twenty participants. RSVP to [linda.bowman@canterbury.ac.nz](mailto:linda.bowman@canterbury.ac.nz) before 6 June, 2007. If you would like to apply for funding support for travel, please contact [tanja.mitrovic@canterbury.ac.nz](mailto:tanja.mitrovic@canterbury.ac.nz) first.

#### Visitors

**Rainer Unland**, University of Duisburg-Essen, Germany, Jan - April 2007.

**Carl Gutwin**, University of Saskatchewan, Canada, Feb - April 2007.

**Chris Mitchell**, University of London, Feb - April 2007.

**Alistair Sutcliffe**, University of Manchester England.

## Departures

**Marcus** left for a career in industry after working as a Senior Tutor for many years.

## Scholarships

TEC Top Achiever Scholarship.

Two CSSE PhD students

**Ray Hidayat:** *Looking at supporting meta-cognitive skills in intelligent tutoring systems.*

**Moffat Mathews:** *Three-dimensional object scanning and recognition for augmented reality*

Two new Technology NZ scholarships have been awarded to CSSE Students for work in the Computer Security area.

Two new Technology NZ scholarships have been awarded by the Foundation for Science Research and Technology for research work with Allied Telesis. In both cases these will lead to Masters Degrees.

**Delio Brignoli's:** *Realtime Identification and Prevention of Network Attack.*

**Andrew McKenzie's:** *Achieving, Detecting and Preventing NAT Traversal for Peer-to-Peer Networks.*

## PhD Theses

**Carl Cook**—*Towards Computer-Supported Collaborative Software Engineering*

**Pramudi Suraweera**—*Widening the Knowledge Acquisition Bottleneck for Intelligent Tutoring Systems*

## Master Theses

**Mohammad Obaid**—*Moment Based Painterly Rendering Using Connected Color Components*

**Trond Nilsen**—*Guidelines for the Design of Augmented Reality Strategy Games*

**Oliver Batchelor**—*Ray Traversal for incremental Voxel Colouring*

**Yi Liu**—*An Evaluation System for Intelligent Smart Badges*

**Oliver Hunt**—*The provision of non-strictness, higher-kinded types and higher-ranked on an Object Oriented Virtual Machine*

**Jung Shin**—*A stylized cartoon rendered for toon shading of 3D character models*

Tim Bell (for Richard Green)

## Auckland

### News

A \$1.7 million endowment has been made to the Department of Computer Science by the Bedogni family. The endowment establishes a Fellowship and a \$10,000 prize in perpetuity for Open Systems Research.

### Award

The University of Auckland team (students **Andrew Olsen**, **Robert Bowmaker** and **Stephen Merriman**) won a bronze medal at the ACM programming competition finals.

### Appointments and Resignations

**Kevin Novins** has resigned.

**Bruce Hutton** will retire in June.

**Mark Titchiner** has moved to Engineering Science.

### PhD Theses

**Diana Kirk**—*A Flexible Software Process Model*

**Fajie Li**—*Exact and Approximate Algorithms for the Calculation of Shortest Paths*

John Hamer

## Victoria

### News

The biggest change at VUW is the introduction of our new Engineering degree, which includes Software Engineering and Network Engineering. The programme has started with a bang: we had almost twice the number of enrolments that we had planned on. The next three years will see a progressive rollout of new courses as the first engineering cohort progresses through the four year programme. We expect the new degree to have a significant effect on the computer science group at VUW, including the management organisation, but the shape of the new structures has not been decided on yet.

We are in the process of making new appointments for the engineering programme and expect to have quite a number of new staff on the ground by next year.

### Research and Study Leave

Several staff have just returned from or are now on Research and Study Leave.

**Marcus Frean** is at Cambridge (UK), working with **David MacKay** and will be in Brazil in the second half

of the year, working on Bayesian methods for machine learning and modeling biological systems.

**James Noble** spent 10 months living in Gwydir Street Cambridge (just opposite the Cambridge Blue, for those who know Cambridge pubs). This time was split between working with **Sophia Drossopoulou** at Imperial College, London on ownership types, particularly multiple ownership, and **Gavin Bierman** at Microsoft Research Cambridge on a range of top secret Microsoft projects. His most significant accomplishment was cycling across Cambridge to the labs in six inches of snow—and then home again before it froze over.

**Kris Bubendorfer** is currently at Melbourne University working with **Rajkumar Buyya**. He has been working on an SLA-aware autonomic web services container, self organising content distribution and Flexible time schedules in Advance reservations.

**Lindsay Groves** is on study leave this year, mostly working in NZ, but will shortly be travelling to the UK and Europe to visit a variety of researchers.

## PhD Theses

Our PhD programme has grown very fast in the last few years and is larger than it has ever been, with 18 current students. In the past year, we have had four PhD students complete:

**Richard Mansfield**—*Stability and Evolution in Rock-paper-scissors Ecologies*

**Stuart Marshall**—*Test Driving Reusable Components*

**Phillip Boyle**—*Gaussian Processes for Regression and Optimisation*

**Alex Potanin**—*Generic Ownership - A Practical Approach to Ownership and Confinement in OO Programming Languages*

Stuart and Alex are current staff members.

## PhD Student Papers

Several PhD students have had papers accepted at international conferences. **Jason Xie** (working with **Mengjie Zhang** and **Peter Andreae**), has had two papers accepted for the 12th Genetic Programming Conference, (part of the 2007 ACM Genetic and Evolutionary Computation conference) to be held in London UK, and received a travel grant award to attend the conference.

**Will Smart**, (also working with **Mengjie Zhang** and **Peter Andreae**), had a paper nominated for the best paper award at the 10th European Conference on Genetic Programming held in Valencia Spain, and also got a travel grant award.

*Peter Andreae*