

## Welcome

Here it is, the first issue of our informal CSANZ Newsletter. My idea is to produce an interesting bit of light reading, around three times a year, giving news of appointments, upcoming visitors, conferences and meetings, grants, new projects, graduate theses completed, publications, and so on. The publication is available electronically from the CSANZ Web site, but please distribute it in paper form to staff and graduate students to ensure that it actually gets read (or at least circulated!).

I don't have any strong preconceptions of what should go in here, except that as far as possible I'd like the information-gathering process to proceed in Departmental offices and not become yet another chore for the chair. This issue has news on appointments, promotions, visitors, events, books, theses, and a report on the Computer Science department at Otago. Though it happened largely by accident, I like the idea a department or two being singled out in each issue for a more discursive report, although this does involve more effort for contributors.

This Newsletter is an experiment and I welcome your ideas. To avoid making this issue overlong I have not included research report titles, but may put them into the next issue. If you have ideas for other things you'd like to see, do let me know!

Ian H Witten  
 Waikato University

## Appointments

Otago CS

**Kevin Novins** PhD Cornell  
 Lecturer (from August 1995)  
 Computer graphics and computer vision with a particular emphasis on scientific visualisation, numerical techniques and medical applications.

**Chris Robertson** PhD Otago  
 Lecturer (from December 1995)  
 databases, with emphasis on the impact of WWW on database technology, the development of temporal databases, and the OS/DB interface.

Otago IS

**Richard T Pascoe** BSc (Hons), MSc, PhD Canterbury  
 Lecturer (from March 1996)

Distributed databases, advanced data modelling, software engineering with spatial information processing and education techniques in tertiary teaching.

Lincoln

**Elizabeth Post** (University of Capetown)  
 Lecturer (from early 1997)

Canterbury

**Tadao Takaoka** (University of Ibaraki, Japan)  
 Professor (from July 1996)

Algorithms, computational complexity and parallel computing.

Victoria

**Gavin Turner** BE (Hons), BCompSci (Hons), PhD Newcastle  
 Lecturer (from March 1996)

Design of algorithms and architectures for massively parallel computing. Also interested in computer graphics and digital image processing.

**Tony Plate** BSc (Hons) Melbourne, MSc NMSU, PhD Toronto  
 Lecturer (from October 1996)

Artificial intelligence and neural networks, knowledge representation in neural networks, applications of artificial intelligence and neural network techniques to data-analysis problems.

**Paul Martin** BSc (Hons), PhD Edin  
 Lecturer (from January 1996)  
 Distributed systems and load balancing.

**Steve Sherwood** SB MIT, PhD Scripps  
 Post Doctoral Fellow (joint post with Geophysics)  
 (from January 1996)

Meteorology, statistics and machine learning.

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## Massey Visitors

Canterbury

### Martin Johnson

Lecturer (from May 1996)  
Artificial intelligence, pattern recognition, image processing, computer architecture.

### Chris Jesshope

Professor (from September 1996)  
Parallel computing, high performance applications, parallel computer design and compilers for data-parallel languages.

### Prof M Fellows (Until October 1996)

Department of Computer Science, University of Victoria, Canada  
Computer science education in schools, computational complexity, combinatorial algorithms.

### Prof K Østerbye (Until January 1997)

Department of Computer Science, Aalborg University, Denmark  
Program understanding through abstraction and documentation.

### Akihiko Machizawa (Until 1998)

Prof S Djordjewic-Kajan (February - May 1997)  
Department of Computer Science, University of Nis, Yugoslavia  
Software metrics, GIS, databases.

### Prof H Thimbleby (May - June 1997)

Department of Computer Science, Middlesex University, UK  
Human computer interaction, computer-supported cooperative work.

### Prof B Mukherjee (July - September 1997)

Department of Computer Science, University of California, Davis, USA  
Lightwave networks, network analysis, network security.

Waikato

### David Bainbridge BEng Edin

Lecturer (from February 1996)  
Image processing, structured document image analysis, computer graphics, and computer musicology.

### Steve Jones BSc (Hons) PhD Stirling

Lecturer (from July 1996)  
Supporting navigation within the World Wide Web, digital library usage and user interfaces, the application of theories of trust to the design of Computer Supported Cooperative Work (CSCW) systems.

### Mark Utting BSc MSc Waikato, PhD UNSW

Lecturer (from October 1996)  
Programming languages, formal methods, interactive proof tools.

Auckland

### Reinhard Klette

Professor  
See <http://www.tcs.auckland.ac.nz/~rklette/>.

### Dr Jacky Baltes

Lecturer  
Artificial intelligence, in particular planning and machine learning.

### Clark Thomborson BS (Hons), MS, PhD Carnegie-Mellon

Professor (from April 1996)  
Optimization of memory-bound computations, data compression, combinatorial optimization, statistical computing, special-purpose hardware design, and the status of women in academic computer science.

Massey

### Dr Alex Shafarenko (December 1996)

University of Surrey  
Computer assisted learning in discrete mathematics, languages and architectures for parallel computers, symmetries of data-parallel languages.

### Dr Cecile Germain (Early 1997 - to be confirmed)

University Sud  
Computer architecture and compilation.

Waikato

### Nina Reeves (July - December 1996)

Cheltenham and Gloucester College of Higher Education  
Usability of GUIs and multimedia interfaces, in particular the use of sound steps in HELP systems. Also interfaces for browsing and searching of digital libraries.

### Bernhard Pfahringer (August 1996 - August 1997)

Austrian Research Institute for Artificial Intelligence, Vienna  
Practical applications of the Minimum Description Length Principle in machine learning, genetic algorithms, constraint logic programming, and search and optimization in general.

## Promotions

### Nikola K Kasabov MSc, DipGrad, PhD TU, Sofia

Congratulations to Nik Kasabov who was promoted this year to the position of Associate Professor at Otago. Interests: Artificial neural networks and fuzzy and hybrid systems within the general domain of knowledge engineering.

### John G Cleary MSc PhD Cant

Congratulations to John Cleary who was promoted to Professor at Waikato earlier this year. Interests: Distributed systems, logic programming, data compression.

## Auckland

**Dr Peter Hertling** (January 1997 - December 1998)  
University of Hagen, Germany  
Algorithmic information theory.

**Dr Yongge Wang** (January 1997 - December 1998)  
Algorithmic information theory.

**Prof Klaus Voss** (January - February 1997)  
Jena, Germany

**Dr Fridrich Sloboda** (January - May 1997)  
Bratislava

## Departmental Report: Otago CS

It has been a very busy year at Otago. Working with our colleagues in Information Science, we had restructured our first year papers for 1996 by introducing a new first year paper COMP101, (Introduction to Information Technology), as both a general service paper and as a prerequisite to the subsequent papers COMP102 (Information Engineering) and COMP103 (Computer Programming). We offered COMP101 in both semesters, and obtained a total enrolment that made it the largest paper in the University for 1996, which we feel clearly demonstrated the latent need for it. It strained our laboratory resources, but was rated a considerable success. Enrolments in the other two papers, both offered in the second semester, were similar to previous years for COSC102. The net effect was an increase in our departmental efts of over 60%, and while we gained some small increases in resources for the year, we are still waiting for the University to respond in a more major way! For those who repeated a lecture three times twice a week we have only admiration. All first year papers used on-line presentation of material with lap-tops and powerful projectors, and copies of notes and some supplements of them were available from the machines in the laboratories. We await enrolments for next year with some interest, and are currently projecting similar numbers for first year, and a modest follow on increase at second year. So far we have been able to retain full open entry in all undergraduate courses. Entry to postgraduate courses is based on previous grades.

Staff has been stable through the period. New staff to arrive include Kevin Novins who joined us in August 1995 with a PhD from Cornell, following some postdoctoral work at Grenoble, and whose main interests are in computer graphics and computer vision with a particular emphasis on scientific visualisation, numerical techniques and medical applications. In December 1995 we also welcomed back Chris Robertson, one of our own PhD graduates from his time on the staff of the University of Queensland. Chris has further developed his interest in databases, with emphasis on the impact of WWW on database technology, the development of temporal databases, and the OS/DB interface. We also welcomed the additional

support from a third departmental programmer, David Robertson. We welcomed Anthony Robins back at mid year after his year's refresher leave of which a significant part was spent at Carnegie Mellon University, Pittsburgh, where he appreciated both the computing and library resources available.

The three main research groups (graphics, artificial intelligence, and database/software engineering) have been active throughout the year, and a steady flow of work has been presented at international and national conferences. We congratulated Mark Williams a PhD student on an award for the best student poster at an international conference at Leeds. He followed it with a memorable seminar in our Friday series that will be hard for any student or staff member to match. A regular series of technical reports and memoranda have been produced, as listed on our Web pages.

The Applied Research Centre (the Black Albatross) have continued their excellent work with Alliance Knitting Yarns, and in mid year obtained a major contract with Toyota New Zealand Ltd for the development of a state of the art database system. A steady flow of other work is also received particularly from clients seeking access to the secure Web site the Centre maintains.

With the University's decision to move fully to semesters from 1998, we are having to re-examine our 200 and 300-level courses, to divide our year long papers into suitable modules as already done for first year. This is likely to have some impact on what we offer, and on how that fits with other universities for any transferring students. From many points of view it will be easier to be completely semester based, rather than to continue to operate under the hybrid system we have at present, but we are not finding the transition simple or easy.

B G Cox

## Events

**OzCHI'96**

Hamilton (Waikato) 24-27 November '96  
OzCHI is a popular and well known conference in the HCI and Software Engineering community. In 1996 OzCHI comes to Hamilton. The University of Waikato, and more specifically, the Department of Computer Science, is playing a major role in organizing and running this event.

**TOOLS NZ Workshop '96**

Auckland (Massey) 2-5 December '96  
This workshop is an industrially oriented event to which we are inviting a number of key players in the areas of object technology, tools development and computer based learning. It will include hands on tutorials on Java, C++, Smalltalk, Ada95 and Eiffel as well as a number of keynote addresses by distinguished developers in these fields. The TOOLS NZ Workshop

'95 was the first international workshop on object oriented technology held in New Zealand. It provided a forum to bring together industry experts, researchers, analysts, application developers, designers, technology managers and application experts engaged in the application of the object oriented paradigm. Now following its success, TOOLS NZ Workshop '96 is envisioned to foster the creation and transfer of ideas relating to object orientation among academics, industry experts, managers and practitioners. It focuses on methodologies, tools and languages that can facilitate the development of next generation systems, as well as on the demanding issues involved in turning these methodologies into practical tools.

#### DMTCS'96

Auckland (Auckland & Waikato) 9-13 December '96  
DMTCS'96, the first of a planned series of conferences organised by the Centre for Discrete Mathematics and Theoretical Computer Science, a joint venture involving the Computer Science and Mathematics Departments of the Universities of Auckland and Waikato, will be held at the University of Auckland (City Campus) from 9 to 13 December 1996.

For more information see the conference home page <http://www.cs.auckland.ac.nz/CDMTCS/docs/dmtcs96.html> or contact the secretary, Steve Reeves, by email: [stever@waikato.ac.nz](mailto:stever@waikato.ac.nz).

#### DisVis'97

Auckland (Auckland) 27-31 January '97  
Many fundamental problems in Computer Vision (Image Processing, Image and Pattern Analysis, 3-D Image Understanding) are related to interesting questions in discrete or computational geometry, discrete topology, or number theory. This workshop about theoretical problems will be an opportunity to present problems, to discuss (partial) solutions obtained so far, and to work together in solving the problems presented.

There will be two days (Monday and Tuesday) of presentations and discussions of open problems, and there will be three days for meetings within working groups and for final reports of these working groups. Computers (Unix, Mac) will be available for workshop participants.

ICONIP'97 jointly with ANZIIS'97 and ANNES'97  
Dunedin/Queenstown (Otago) 24-28 November, '97  
The Fourth International Conference on Neural Information Processing—The Annual Conference of the Asian Pacific Neural Network Assembly, jointly with The Fifth Australian and New Zealand International Conference on Intelligent Information Processing Systems, and The Third New Zealand International Conference on Artificial Neural Networks and Expert Systems.

Papers due: 30 May 1997  
Proposals for tutorials: 30 May 1997  
Notification of acceptance: 20 July 1997

Final camera-ready papers due: 20 August 1997  
Registration of at least one author of a paper: 20 August 1997  
Early registration: 20 August 1997

#### TFCV'98

(Auckland) 16-20 March '98  
This workshop addresses a subject which has been under active discussion in computer vision for several years. The evaluation and validation of algorithms is of basic importance for the configuration of computer vision applications. In the ideal case certain "data sheets" should allow to qualify algorithmic solutions in a specific context, e.g. defined by image data, goal of image analysis, or software environment ("edge detection is not equal to edge detection"). There is a lack of methodological fundamentals in the field of performance analysis.

The workshop follows typical topics in computer vision. "Compression" could play the role of the "good example" because the evaluation of compression methods is well developed based on comparisons of compression rates, behavior on specific test sequences, and evaluation of image quality after decompression. There are some other fields in computer vision where an extensive literature about evaluation and validation of algorithms is available, e.g. motion analysis, digital geometry, shape reconstruction, or image registration, but still we are quite far away from "final answers" in these fields. The workshop should contribute to methodical fundamentals and to specific proposals concerning topics as test data or testbeds, computer vision libraries, or (formal) context specifications of algorithms.

### Marsden Funding

This year three Marsden grants were awarded in the CS area, to

- Phil Bones, EE Canterbury  
*Super-resolution of imagery*
- John Cleary, Waikato  
*Temporal declarative programming*
- Ian Witten, Waikato  
*Theory evaluation and amalgamation in machine learning*

The members of the Maths and Information Science Panel were

- Marston Condor, Auckland
- Sir Ian Axford, Max Planck Institute
- John Butcher, Auckland
- Rob Goldblatt, Victoria
- Ian Witten, Waikato
- Brian Manly, Otago

The panel awarded a total of fifteen grants, thus our area received 20% of them. Frankly I don't think that as a discipline we did particularly well out of this, though as a member of the Panel I was reasonably

impressed at how it was run and I do think that the right decisions were made. (I am somewhat embarrassed at having received an award myself; I had already put in an application when I was approached to serve on the panel, and can only assure you that conflict-of-interest procedures are in place and were rigorously applied.) Next year the Panel will be reconstituted: I have no idea who will be on it.

My advice for next year is to keep trying—it's important for our discipline. The sum of money in the Marsden fund is growing quite significantly, and the demand from some of the top researchers is satiated, so I think that the chance of success can only increase (and in future years, it may start to decrease again).

But the standard is very high. You are competing with a large cohort of mathematicians with very good research records, who have no other sources of research funding—and they are painfully aware that by the very nature of computer science we have opportunities of tapping the PGSF fund, and industry funds, that they cannot aspire to. It is essential that your application is innovative, creative, fundamental, well thought out, carefully substantiated, and meticulously prepared.

I wrote an article several years ago in Canada several years called "how to get a research grant" It has recently been updated by Janice Glasgow, retiring chairperson of the Canadian Computer Science research grants committee. It contains the best general advice I can give on how to prepare research grant applications (though it's tailored to NSERC, not Marsden, that doesn't affect most of the points). You can access it from Janice's home page, <http://www.qucsi.queensu.ca/~janice>.

Ian H Witten

## Books and Book Series

**Nikola Kasabov**, *Foundations of Neural Networks, Fuzzy Systems, and Knowledge Engineering*, The MIT Press. Neural networks and fuzzy systems are different approaches to introducing human like reasoning to intelligent information systems. This text is the first to combine the study of these two subjects, their basics and their use, along with the symbolic AI methods and the traditional methods of data analysis, to build comprehensive artificial intelligence systems.

*Discrete Mathematics and Theoretical Computer Science* Springer-Verlag, Singapore, announces a new Series *Discrete Mathematics and Theoretical Computer Science*, produced in cooperation with the Centre for Discrete Mathematics and Theoretical Computer Science of the Universities of Auckland and Waikato, New Zealand. This Series will bring to the research community information about the latest developments on the interface between mathematics and computing, especially in the areas of artificial intelligence, combinatorial optimization, computability and complexity, theoreti-

cal computer vision. It will focus on research monographs and proceedings of workshops and conferences, aimed at graduate students and professional researchers, and on textbooks, primarily at the senior undergraduate or beginning graduate level.

## Masters Theses

### Otago IS

1995

**A M White** *The capacity of an extended-relational database to represent a skeleton object model*

1996

**R I Kilgour** *Hybrid fuzzy systems and neural networks for speech recognition*

**A J Marr** *Geographical information systems maturity in New Zealand local government*

**C A H Rodgers** *Business contingency planning within the Japanese corporate environment*

**R Scarborough** *A study of the feasibility of linking streamflow models and geographical information systems*

**S Turk** *The development of a methodology for a pinus radiata inventory of the South Island*

### Canterbury

1996

**E C Daly** *Information privacy and the ethics of information technologies: from Kant to cryptography*

**S Murugesh** *Computers in education: an expert system shell to improve children's classificatory skills*

**J Anstice** *A Pen-input Computer Music Editing System*

**S Kolahi** *Performance modelling of congestion control protocols in ATM networks*

**N I Sarkar** *Probabilistic scheduling strategies for unidirectional bus networks*

**A Tay** *End user tailorability in workflow design*

### Victoria

1996

**Aaron Roydhouse** *Intelligent Retrieval of Historical Meteorological Data*

**Kris Bubendorfer** *Adaptive Resource Prediction for Task Allocation in a Distributed System*

### Massey

1996

**G U Jianpeng** *A menu interface development environment based on Lean Cuisine, MA*

**Paul Kevin Clark** *Methodology independent CASE tools. A prototype*

## Waikato PhD Theses

1995

**Arie Adriaan de Wit** *A Preliminary Investigation into Modelling the Scalable Coherent Interface using Time Warp*, MSc

**Richard H Littin** *Mathematical Expression Recognition: Parsing Pen/Tablet Input in Real-Time Using LR Techniques*, MCMS

**Brent Martin** *Instance-Based Learning*, MSc

**Mark van Walraven** *An Ultra-Small Micro-Kernel with Address Spaces Decoupled from Processes*, MSc

1996

**Rod M Davies** *Computer Program Compression*, MCMS

**James Littin** *Learning Relational Ripple-down Rules*, MCMS

**Maria Marcella Plummer** *Software Reuse: Current Practice and the Influence of Managerial and Technical Factors*

**Phillip Treweek** *Factors in Machine Interface Preference*, MCMS

## Auckland

Submitted

**Burkhard Claus Wuensche** *A Fast Polygonization Method for Quasi-Convolutionally Smoothed Polyhedra*

## Canterbury

Submitted

**D Bainbridge** *Extensible Optical Music Recognition*

**V Yau** *WDM Networks Design and Destination Conflicts*

## Waikato

1996

**Matthew Cameron Humphrey** *A graphical notation for the design of information visualisations*

**Craig Nevill-Manning** *Inferring Sequential Structure*

Submitted

**Masood Masoodian** *Human-to-Human Communication Support for Computer-based Shared Workspace Collaboration*

**Matthew Paul Melchert** *Analysing Communication Patterns in CSP Processes using Channel Graphs*

**Derek Antony Wong** *A Distributed Adaptive Debugger Server*