OR NEWSLETTER

November 2008

Operational Research Society of New Zealand, Inc.
PO Box 6544, Wellesley St. Auckland, New Zealand, www.orsnz.org.nz

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The newsletter is published three to four times per year, regular dates are March, June, September, and December. Submissions deadline is the 15th of the month for the following month's issue. Send contributions by email to the Newsletter editor, Matthias Ehrgott, at newsletter@orsnz.org.nz.

President's Report

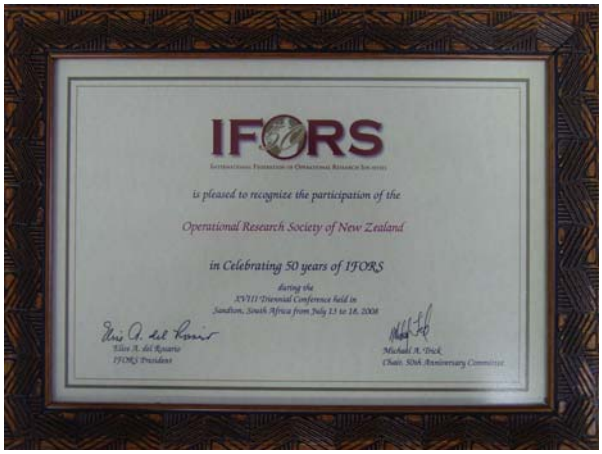
We are approaching the end of another year in the ORSNZ calendar. This time brings with it the excitement of finalising the accounts, navigating our way through the auditing process, and then preparing the Annual Report. I'd like to thank Lloyd Austin from the business school at the University of Auckland for taking on this year's auditing, a thankless task involving detailed scrutiny and checking of our financial transactions. Lloyd volunteered for this job because our usual auditor (and long time member), Paul Rouse, is currently on sabbatical. It is a credit to the hard work of our treasurer, John Paynter, that Lloyd is able to report everything's looking fine for this 2007/08 financial year.

Hamish Waterer has been busy upgrading the conference web site. I've also learnt far too much about web programming, PhP, and secure certificates as I've worked with Hamish to develop the interface for our new online credit card processing facility. If you visit the conference web site http://conference.orsnz.org.nz, you'll see that we now accept online credit card payments; these are processed through a secure server that talks directly with the BNZ. Many thanks to Hamish for all his hard work in making this happen.

The main load of the conference falls this year on Mark Johnston from Victoria University. Organising a conference can, at times, also seem like a thankless task, but a successful conference will make it all worthwhile. Mark's contribution is particularly appreciated as he is juggling conference organisation with the sleepless joys of new fatherhood. Thanks to the work of Mark and John Haywood, this year's conference is indeed shaping up to be an excellent one, with great looking presentations and plenary addresses. It is good to see both old and new names amongst the sponsors for the conference; Operations Research is definitely alive and kicking in the corporate world. In times of an economic downturn, the OR contribution these companies can make is perhaps even more important. We thank them for their generous support.

I mentioned last time that a number of our members recently visited South Africa for the International Federation of OR Societies (IFORS) conference. This conference marked the 50 year celebration of IFORS. David Ryan was presented with a plaque commemorating this event (see below), which will shortly be hanging on our web site.

David Ryan of NEW ZEALAND receiving the 50th IFORS commemorative plaque for ORSNZ. Image courtesy IFORS; http://www.ifors.org/member_societies/new_zealand.html



Talking of anniversaries, I mentioned last time that the Engineering Science department was about to celebrate its 40th. I am pleased to say that these celebrations went very well, with over 300 attending the anniversary dinner.

Please remember that you can register for the conference, running Monday 24 and Tuesday 25 November in Wellington, at

http://conference.orsnz.org.nz

I look forward to seeing you there.

Andrew Mason

ORSNZ'08

43rd ORSNZ CONFERENCE

Monday 24th and Tuesday 25th November 2008

Time	Conference Programme (Monday 24th Nov 2008)	
8:30 - 10:00	**Welcome breakfast**	
10:00 - 10:20	**Official Conference Opening and Welcome**	
10:20 - 11:00	*Session Chair: Mark Johnston* *Plenary Talk* - Craig MacLeod	

11:10-12:30	**Lecture Theatre 1** **Young Practitioners' Prize I** *Session Chair: Hamish Waterer* 11:10-11:30 Anders Dohn and Esben Kolind - Optimizing Manpower Allocation for Ground Handling tasks in Airports using Column Generation 11:30-11:50 Savindren Iyer - Computing Shortest Paths in Large Road Networks 11:50-12:10 Lei Zhang - Optimization of Ambulance Relocation/Moveup 12:10:12:30 Solai Chidambaram - A Cyclic Staffing Model Incorporating Fatigue	
12:30-1.30	**Lunch**	

1.30-2:50	**Lecture Theatre 1** **Young Practitioners' Prize II** *Session Chair: Shane Dye* 1:30-1:50 Andrea Raith - Traffic Assignment with Travel Time and Toll Cost Objectives 1:50-2:10 Dustin Philip - An algorithm for the Biobjective Integer Transportation Problem 2:10-2:30 Gemma Clark - Elder Care in NZ: A Multi-framing Approach 2:30-2:50 Antony de Pont - Order Picking in Warehouses	
2:50-3.20	**Afternoon Tea**	

3.20-5:00	**Lecture Theatre 1** **Young Practitioners' Prize III** *Session Chair: Stefanka Chukova* 3:20-3:40 Pang Fei Cheung - The Referee Assignment Problem for Soccer Leagues 3:40-4:00 Christopher Ball - Scheduling Super 14 Rugby 4:00-4:20 Sarah Marshall - A product recovery model that uses the quality of returns to determine type of recovery 4:20-4:40 Kevin Lao, Brendan Kite - Evaluation of Clean Development Mechanism and Joint Implementation Projects 4:40-5:00 Athena Wu - Cost-allocation Models in Electricity Systems	
5:00-6:30	**ORSNZ AGM and Council Meeting**	
7:00-late	**Conference Dinner at the Skyline Restaurant**	

Time	Conference Programme (Tuesday 25th Nov 2008)	
	Lecture Theatre 1	**Lecture Theatre 2**
8:10-9:50	**Scheduling and Optimisation I** *Session Chair:* 8:10-8:30 Fuh-Hwa Franklin Liu and Ling Chuan Tsai - Reallocating multiple inputs and outputs of units to improve the overall performance 8:30-8:50 Imran Ishrat, Matthias Ehrgott and David Ryan - Optimized Schedule Recovery in Airlines: A Review 8:50-9:10 Liuhuan Dong - Flexible Pricing and Empty Balancing on Container Transportation 9:10-9:30 Dong Wang - The Optimization of Quadratic Programming with Inequality Convex Quadratic Constraint 9:30-9:50 Richard Marshall and Mark Johnston - Integrating Rewards with the Freeze-Tag Problem	**OR in Business I** *Session Chair:* 8:10-8:30 Nedialko Dimitrov and Stefanka Chukova -Online Approach in Warranty Optimization 8:30-8:50 Shilei Yang - Combined Mail-In Rebate and MSRP Promotion Strategies in Distribution Channels with Reference-Dependent Consumers 8:50-9:10 Arun Elias - A Systems Model on Residential Energy Efficiency in New Zealand 9:10-9:30 Grant Read - An Expanded Co-optimisation Formulation for New Zealand's Electricity Market 9:30-9:50 Nic Dalton - Operations Research in a Strategy Environment - Bridging Theory with the Real World

10:00-10:40	*Session Chair: Victoria Mabin* **Plenary talk:** Anita Schöbel - Stops, lines, delays and tariffs: Discrete optimization in public transport	
10:40-11:10	**Morning Tea**	
11:10-12:30	**Lecture Theatre 1** **Scheduling and Optimisation II** *Session Chair:* 11:10-11:30 Tiru Arthanari and Laleh Haerian Ardekani - Performance of MI-Relaxation on the Local Search Test problems of Papadimitriou and Steiglitz 11:30-11:50 Lizhen Shao and Matthias Ehrgott - Solving the Intensity Problem of Radiotherapy Treatment Planning 11:50-11:50-12:10 John Raffensperger - A New Algorithm for the Collection Area Problem 12:10-12:30 Fernando Beltrán and Oliver I-Ju Chiang - Efficiency and budget balance across network topologies in two multicast routing cost allocation mechanisms	**Lecture Theatre 2** **OR in Health** *Session Chair:* 11:10-11:30 Terri Green and Ian Sheerin - Modelling the Cost and Effectiveness of Treating Hepatitis C for Injecting Drug Users 11:30-11:50 Kim Sommer and Victoria Mabin - Exploring the Elder Care Conundrum using SSM and TOC 11:50-12:10 Nokuthaba Sibanda - Healthcare Patient Outcome Monitoring using a Sequential Likelihood Ratio Test 12:10-12:30 Ilze Ziedins - Capacity allocation and rostering for an intensive care unit

12:30-1.30	**Lunch and Photos**	
1.30-2:50	**Lecture Theatre 1** **<u>Scheduling and Optimisation III</u>** *Session Chair:* 1:30-1:50 David Richards - Optimised Resource Locations for Emergency Services 1:50-2:10 Antonio Pinto, Thomas Cochrane and John Raffensperger - A proposed Smart Market for Sediment Discharge 2:10-2:30 Natashia Boland - Multistage Stochastic Programming for Open Pit Mine Production Scheduling 2:30-2:50 Pim Beers - Optimizing Manufacturing Processes with AIMMS	**Lecture Theatre 2** **<u>OR in Business II</u>** *Session Chair:* 1:30-1:50 Karthikeyan Peedikappurath - Modelling Indian Natural Rubber Market: A case for combining hard OR with soft OR 1:50-2:10 John Davies and Victoria Mabin Understanding the Communality of Industry - wide Dilemmas and Conflict using Systems Representational Tools - from Problem to Solution Archetypes 2:10-2:30 Don Wignall - Big Picture Transport Planning: When Precision Fails and Approximation Succeeds 2:30-2:50 Edward Petersen and W. G. Wood - Highway Development, Impact of Tolling and Role OF Government Subsidies
2:50-3.20	**Afternoon tea**	

3:20-4:40	**Lecture Theatre 1** **<u>Diversity in OR</u>** *Session Chair:* 3:20-3:40 Susila Munisamy - Corporate Operations Research Practice: Evidence from Malaysia 3:40-4:00 Shane Dye and Nicola Petty - LP Spreadsheet Layout: Guidelines for Teaching First Year Students 4:00-4:20 John Paynter - CATI - Balancing the Cost and Quality of Information Collection	**Lecture Theatre 2** **<u>Stochastic OR</u>** *Session Chair:* 3:20-3:40 Stefanka Chukova and Yuichi Hirose - On the Estimation of 2D-Mean Cumulative Function 3:40-4:00 Richard Arnold, Stefanka Chukova and Yu Hayakawa - A New Model for Damage Accumulation in Multi-Component Systems 4:00-4:20 John Haywood and Granville Tunnicliffe Wilson - Better Multi-step Prediction: A New Test for Robustness of ML Parameter Estimates
4:20-4:30	**Closing**	

People

Anita Schöbel – Visiting ORSNZ Lecturer 2008/2009.

Anita is the Professor of Optimization at the Institute for Numerical and Applied Mathematics, University of Göttingen, Germany. She has an M.Sc., PhD and Dr. habil. From the University of Kaiserslautern. Her main research interests are in combinatorial optimization, operations research, algorithms, location theory and in particular applications to traffic planning. She has published more than 40 refereed papers, four books and two book chapters. Her book Optimization in public transportation. Stop location, delay management and tariff planning from a customer-oriented point of view was published by Springer in 2006. More information about Anita is on her website at http://num.math.uni-goettingen.de/schoebel/

"Delay management, stop location, and tariff planning – these are three examples of areas in which modern methods of mathematical optimization can help to improve the attractiveness of public transportation."

Ted Ralphs – Visiting ORSNZ Lecturer 2009.

Dr. Ralphs has a B.S. and M.S. in Mathematics from Carnegie-Mellon University and an M.S. and Ph.D. in Operations Research from Cornell University. He is currently an associate professor in the Department of Industrial and Systems Engineering (ISE) at Lehigh University, where he is co-director of graduate programs, director of the Laboratory for Computational Optimization Research, and chair of Lehigh's High-performance Computing Steering Committee. He is a co-founder of the COIN-OR Foundation, a non-profit foundation promoting the development of open source software for operations research and currently serves as treasurer, chair of the Technical Leadership Council, and member of the Strategic Leadership Board, as well as project manager of a number of projects hosted in the COIN-OR open source software repository. He also serves on the editorial boards of three leading journals. Dr. Ralphs is a recognized expert in computational optimization and high-performance computing. His research interests include development of methodology for solving integer programs, development of parallel search algorithms, development of open source software, and applications of integer programming. Recent application areas include development of mechanisms for combinatorial auctions, solution of routing and scheduling problems, solution of interdiction problems, analysis of integer programs with multiple objectives, and analysis of hierarchical decision model with discrete variables. His CV can be found at http://coral.ie.lehigh.edu/~ted/cv/ .

Chapter News

Auckland News

Since your correspondent has been on sabbatical leave this semester, there is little to report from the Auckland Branch since my last report in July.

The EPOC Winter Workshop was run at Auckland University on September 5th. There were about 40 attendees from around the country. Details of the presentations can be found at www.esc.auckland.ac.nz/epoc. EPOC is hosting Professor Shmuel Oren from Berkeley over the next two weeks. Shmuel will be giving two public seminars on November 14 and November 19.

In other news, Richard Lusby successfully defended his PhD thesis entitled "Optimization methods for Routing Trains through Railway Stations", a project that has been carried out in collaboration with Deutsch Bahn. Two days after his oral examination, Richard was on a plane to Denmark, to pursue postdoctoral study at DTU in Copenhagen. We wish him well in his future career.

Andy Philpott, Geoff Pritchard and Oddo Zhang attended INFORMS in Washington DC in October. Following the conference, Oddo has been touring the US and giving some presentations on his PhD research involving ambulance relocation. Following INFORMS, Andy Philpott spent a week at Wharton working with Gerard Cachon.

Andy Philpott

Canterbury News

No news were reported.

Waikato News

Jim Corner has been on International Leave for most of the past two months. After presenting at AMCIS in Toronto, he visited colleagues at the following universities: in Canada - University of Ottawa, Carleton University and the University of Sherbrooke (who have a knowledge transfer lab...way cool); in the US - University of California Sacramento, Indiana University, Purdue University, Fort Wayne. In addition, he spent a week at Wright-Patterson Air Force Base in Ohio visiting his colleague who runs the OR group at AFIT (Air Force Institute of Technology), which is the graduate school for the Air Force Academy. The PhD students there are mainly colonels in the military, astronauts and CIA members, so Jim is assigned the rank of honorary colonel while there. However, since he is a civilian, you don't have to salute him. One salutes the uniform, not the person. The projects there also are confidential but he does report that he worked on a forecasting project for the resupply problem for the international space station. Finally, Jim tore cartilage in his knee just before heading out on this trip and had to hobble around airports in pain. The things we do for research.

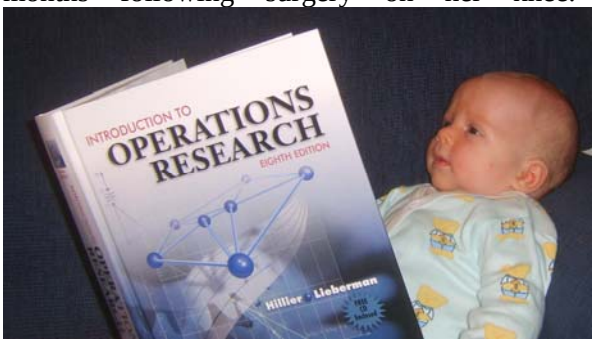
Chuda Basnet

Wellington News

We would love to see you all at the ORSNZ'08 conference, which is taking place in Wellington on Monday 24th and Tuesday 25th November at Victoria University of Wellington. For full details and online registration, see the conference website at http://www.orsnz.org.nz/conf/. We have discovered (not surprisingly in hindsight) that organisation of an Operations Research conference involves a lot of Operations Research: forecasting, break-even analysis, the old newspaper-vendor problems (with conference proceedings), project management, sensitivity, and of course constraints, costs, uncertainty and risk. The conference will kick off with a long breakfast on Monday morning, with the conference opening at 10am. The conference dinner on Monday evening will be at the Skyline Restaurant. Generous sponsorship from ILOG Australia, Dalton-Yee (DY) Consulting, Orbit Systems, Hoare Research Software, The ICE-HOUSE, Paragon Decision Technology and The Optima Corporation, has enabled us to keep the registration fees quite low this year. The keynote speakers are Craig MacLeod (Orbit Systems, Wellington) and Prof Anita Schöbel (University of Göttingen).

At Victoria University, a new "School of Mathematics, Statistics and Operations Research" comes into effect on 1st January 2009, together with a new "School of Engineering and Computer Science". It is fantastic to see Operations Research in the name of the new school and the university's commitment to Operations Research. From 2009, we are required to redesign all our courses to fit standard 15 point sizes. And of course we are celebrating lots of exam marking. Recent visitors have included Ned Dimitrov (UT Austin, online convex optimization), Moshe Haviv (The Hebrew University of Jerusalem, the Shapley value in game theory) and Pra Murty (University of Queensland, warranty analysis). On a personal note, Mark and Emily Johnston are celebrating the arrival of Hamish who was born in late July, and have already begun his indoctrination into OR (see photo), and Stefanka Chukova has been hobbling around on crutches for the past couple of

months following surgery on her knee.



Victoria Management School are looking to make two academic appointments. See the advertisement for "Lecturer/Senior Lecturer in Operations Management/Decision Science/Systems" in this newsletter and note that the closing date for applications is November 26th. After many years of dedicated service, John Davies is stepping down as Head of School. Vicky Mabin has completed her three year term as Asia Pacific Editor of the International Transactions in Operational Research (ITOR) and Moshe Sniedovich (University of Melbourne) has been appointed the new Regional Editor. Vicky is now on the Editorial Board, along with David Ryan, and is still happy to advise/assist members on paper publication in ITOR. Vicky says "Can I take this opportunity to thank all those in the ORSNZ community who have helped with refereeing. Your help has been much appreciated and is being acknowledged in a coming issue of the ITOR."

Mark Johnston

OR Theses

Sarah Marshall (2007). *On the Analysis of Reliability Data*, MSc Thesis, Victoria University of Wellington. Supervised by A/Prof Stefanka Chukova, School of Mathematics, Statistics and Computer Science, Victoria University of Wellington.

Abstract. Fitting models to observed failure data from a system is an important topic in reliability. The resulting models can be useful both for the manufacturer, as well as for the end-user, of a system. In this study, we first provide a summary of some useful results from reliability theory. Then we present two procedures, which have been developed by extracting methods from the existing literature, that can be used as a starting point when analysing and fitting models to failure data. In particular we focus on obtaining analytical estimates of the lifetime distribution (for data from nonrepairable systems) and of the intensity of a NHPP (for data from a repairable system). We illustrate some of the methods and tests in these procedures on simulated data and also on failure data from the warranty database of a major car manufacturer.

Julie Anne Harrison (2008). *Results or processes? Alternative approaches to the performance measurement of New Zealand secondary schools.* Doctor of Philosophy in Accounting. Supervised by A/Prof Paul Rouse, Department of Accounting and Finance, The University of Auckland.

Julie Harrison graduated with a Master of Commerce in 1990 and a Master of Taxation Studies in 1998 from The University of Auckland. Following a period working in business, she started her Doctor of Philosophy studies in the Department of Accounting and Finance in 2001. Her PhD research was supervised by Associate Professor Paul Rouse of The University of Auckland and Associate Professor Gregory Schwann of The University of Melbourne and was supported by a New Zealand Institute of Chartered Accountants' Doctoral Scholarship.

Julie examined two alternative approaches to the measurement of school performance. The first approach used quantitative data and a production model implemented using Data Envelopment Analysis. The second approach used qualitative data extracted from Education Review Office reports to construct an index of performance. In addition, she analysed the impact of selected Tomorrow's Schools reforms on secondary school performance in the 1990s.

The results from the two alternative approaches to school measurement were compared and were found to have statistically significant correlations. This indicates that it is possible to capture valid information about school performance using both quantitative and qualitative data. Further, different methods and different types of data can assist in providing better information to different stakeholder groups.

The analysis of the performance-based reforms on secondary school performance in the 1990s found that the performance of bulk-funded schools was not significantly different to those that were not bulk-funded. In contrast, some evidence was found that smaller, privately-owned, schools integrated into the state system

had higher levels of efficiency than similar sized state-owned schools, supporting their retention in the public education system. Further, the introduction of competition among state schools through the abolition of school zoning appears to have benefitted only some schools, with larger schools increasing their efficiency at the expense of smaller schools.

Julie is currently employed as a lecturer in the Department of Accounting and Finance at The University of Auckland.

IFORS News

Dear President of IFORS Member Societies,

The new IFORS website is now available, along with the latest issue of the IFORS Newsletter. www.ifors.org If you click on your region, the country listing will appear. Clicking on you country will bring you to your Society's profile. Kindly email me with updates on the information reflected therein.

Please disseminate this information to all your members.

Best regards,

Mary Magrogan

IFORS Secretary

Emotions and Decision Making

A student brought this interesting article to my attention. The article talks about how emotions play a crucial role in decision making. Here is the link: http://lifestyle.in.msn.com/relationships/article.aspx?cp-documentid=1681817.

Scientists Andrew Stephen and Michel Tuan Pham looked at the interplay of emotion and reason in everyday deal making and found that our negotiating skills depend on our emotions to some extent.

The participants were made to play a classic negotiation game called the "ultimatum game."

In the ultimatum game, one person (the "proposer") has a given amount of cash, which he is told to divide with a second person any way he likes. The catch is that the second person must either accept the offer or reject it entirely, no negotiation allowed. If he rejects it, both players walk away with nothing.

For the study, the researchers manipulated how much participants trusted their feelings before they played a series of ultimatum games for real money.

They asked some of the participants to think of two occasions in their past when trusting their feelings to make decisions resulted in good outcomes.

People generally find it easy to think of two such occasions, giving participants greater confidence in trusting their own emotions while making decisions.

Other participants were told to think of 10 occasions when trusting their feelings to make decisions resulted in poor outcomes this made participants wary of trusting their feelings.

Then all the participants played a computerized version of the ultimatum game, in the role of "proposer."

The researchers found that participants who were more confident in following their emotions offered somewhat less money than the others.

This is because they were more focused on the "gist" of the offer itself (and what felt good), rather than on estimating the other player's possible reaction and calculating the probabilities of payoff. In short, the immediacy of the offer trumped the more complicated calculation.

The researchers believe that emotional negotiators actually have an easier time visualizing the offer itself: They picture themselves offering someone 20 dollars from their 50 dollars pot and it feels "okay."

The study appears Psychological Science, a journal of the Association for Psychological Science.

Vicki Bier

LECTURER/SENIOR LECTURER IN OPERATIONS MANAGEMENT/DECISION SCIENCE/SYSTEMS

Victoria Management School

Pipitea Campus

The Victoria Management School invites applications for one permanent and one three year fixed term position in the School's Management Group. Candidates should have well-developed teaching and research interests that would allow them to make an effective contribution to activities spanning the broader fields of Operations and Supply Chain Management, TOC, Systems and Decision Sciences, and have, or near completion of a PhD in a relevant discipline. The appointee will be expected to undertake undergraduate, postgraduate and post experience teaching within Victoria Management School, postgraduate research supervision, and develop a strong research programme in keeping with the School's emphasis on high-quality scholarship.

Reference A333-08H - 3yr fixed term position

Reference A332-08H - Permanent position

Applications close 26 November 2008

For further information and to apply online visit

http://vacancies.vuw.ac.nz

Victoria University of Wellington is an EEO employer and actively seeks to meet its obligations under the Treaty of Waitangi.

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI VICTORIA UNIVERSITY OF WELLINGTON

PhD Project in Management Science- based in Christchurch, New Zealand

Cost-benefit studies related to foodborne disease in New Zealand

Evidence-based decision making for food safety interventions requires:

- evaluation of public health benefits;
- estimation of costs to industry and regulators;
- criteria for ranking options; and,
- expression of targets and monitoring of interventions in practical terms.

This project will develop the theoretical basis of tools for evaluation of food safety interventions, in order to facilitate the translation of risk assessment into risk management, in keeping with international obligations.

The Food Safety Group at ESR (Environment and Scientific Research) performs scientific research underpinning risk management for foodborne disease in New Zealand. This project will use selected case-studies of food/hazard combinations in the New Zealand context to illustrate the issues. A key part of the analysis will be the use of quantitative risk models of the food chain to assess effects on public health and estimate costs, with associated analysis of uncertainty and variability. This project will involve research in modelling, economics, management science, and public health metrics. Communication with sectors of the food industry will be an important part of the project.

This is collaborative work between ESR and the Department of Management, University of Canterbury. Supervision will involve staff from ESR and the University of Canterbury. The successful applicant may be eligible to apply for scholarship funding. An honours degree or equivalent in a relevant quantitative discipline is essential. Normal expectation is 3 years duration to complete a PhD. Part- time options, over a longer period, may be considered.

ESR is a Crown Research Institute specialising in science solutions in the fields of food safety, water quality, health and forensics. www.esr.cri.nz

For further information contact Dr Rob Lake (rob.lake@esr.cri.nz) or Dr Terri Green (terri.green@canterbury.ac.nz)

The University of Canterbury and ESR are equal opportunity organisations.

CIMI, Computational Incentive Mechanism Incubator

Research Assistantship

This two-year project aims to develop a software platform to simulate market-based resource allocation methods through a computational incentive mechanism incubator. The platform is built using an agent-based computational environment that facilitates the analysis of allocation efficiency and price determination in a wide variety of resource allocation problems.

Conventional applications include resource allocation services as seen in telecommunication network pricing, the allocation of radio spectrum by telecommunication regulators, general market-based scheduling problems, bandwidth-on-demand, etc.

The incubator will be used to host, simulate and test the incentive mechanisms proposed as solutions to the problems. The software platform will be written in JADE, a JAVA-based application.

We are looking for two **research assistants.** A description of the assistant profile follows.

- Object-oriented modelling and JAVA programming skills are essential.
- It is desirable to be acquainted with JADE, Java Agent Development framework.
- Preferably, a current Ph.D. student in the Engineering Science or Computer Science Department.
- Engineering Science, Software Engineering and Computer Science Masters students are encouraged to apply as well.
- It is desirable the candidate demonstrates affinity with resource allocation problems.

Assistantship's time commitment is 20 to 25 hours a week for 20 months.

Please contact

Fernando Beltrán

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Meetings Calendar

New Zealand

43rd Annual Conference of the Operational Research Society of New Zealand
24 – 25 November 2008, Wellington, New Zealand
http://www.conference.orsnz.org.nz

Asia Pacific

The 9th Asia Pacific Industrial Engineering & Management Systems Conference
3 – 5 December 2008, Bali, Indonesia
http://www.apiems2008.org

International

VI ALIO/EURO Conference on Applied Combinatorial Optimization
15 – 17 December 2008, Buenos Aires, Argentina
http://alioeuro2008.dc.uba.ar

International Workshop on Data Mining
22 – 27 December 2008, Hyderabad, India
http://home.iitk.ac.in/~mayankv/Web_DM_Maam/index.htm

International Conference on Business Data Mining
28 – 31 December 2008, Hyderabad, India
http://home.iitk.ac.in/~mayankv/DM_conference_final/index.htm

Sixth AIMS International Conference on Management
28 – 31 December 2008, Greater Noida, Delhi Region, India
www.aims-international.org/aims6

69th Meeting of the European Working Group on Mulcicriteria Decision Analysis
2 – 3 April 2009, Brussles Belgium
www.mcda69.org

IEEE Symposium Series on Computational Intelligence 2009
30 March – 2 April 2009, Nashville, USA
http://www.ieee-ssci.org

5th International Conference on Evolutionary Multi-Criterion Optimization EMO09
7 – 10 April 2009, Nantes, France
www.emo09.org

INFORMS Practice Conference: Applying Science to the Art of Business
26 – 28 April 2009, Phoenix, AZ, USA,
http://meetings.informs.org/Practice09/

Second Global Conference on Power and Optimization PCO2009
1 – 3 June 2009, Bali, Indonesia
http://www.engedu2.net

8th World Congress on Structural and Multidisciplinary Optimization (WCSMO-8)
1 – 5 June 2009, Lisbon, Portugal
http://www.wcsmo8.org/

CORS-INFOMS International Meeting
14 – 17 June 2009, Toronto, Canada
http://www.meetings.informs.org/Toronto09/

20th International Conference on Multiple Criteria Decision Making
21 – 26 June 2009, Chengdu/Jiuzhaigou, China
http://www.mcdm2009.cn

23rd European Conference on Operational Research
5 – 8 July 2009, Bonn, Germany
http://www.euro-2009.de

See also http://meetings.informs.org/ for extensive listings of conferences.

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