



CIAO Newsletter

Centre for Informatics & Applied Optimization

School of Information Technology & Mathematical Sciences

Edition 12, March 2006

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Overview of CIAO

Founding Director of CIAO

We have pleased to announce that Professor Alex Rubinov has been awarded the new title of Founding Director of CIAO.

This new title recognises Professor Rubinov's significant contribution to the establishment of CIAO over the last five years, and the international status and reputation he brings to this successful Research Centre

New Director of CIAO

Associate Professor John Yearwood will assume the position of Director of CIAO, after serving in the Deputy Director role for the past five years.

New Deputy Director of CIAO

Professor Mirka Miller has been appointed to this position.

New Research Co-ordinator – School of ITMS

Congratulations to Dr David Yost, who took over this important role in early March 2006.



New Research Group Leader : MASARG

We congratulate Dr Adil Bagirov, who has taken over the role of Leader for the Mathematical & Statistical Analysis Research Group.

Community Engagement with Senior Professionals

CIAO recently participated in a third highly successful briefing session for senior business professionals from the Ballarat business community.

The briefing session included presentations from the following UB personnel:

- o Acting Vice-Chancellor Professor Kwong Lee Dow: welcomed participants to the briefing session.
- o Professor Sid Morris: provided an overview of the School of ITMS and its success.
- o Associate Professor John Yearwood: outlined research projects undertaken by CIAO.
- o Philip Lee, Booth & Lee Real Estate: spoke about his company's internet presence and its rapid evolution.
- o Scott Hebbard: provided information on the collaborative relationship between IBM and ITMS.

This community engagement aims to build closer relationships within the Ballarat region, and provide the opportunity for local commercial enterprises to benefit from CIAO's expertise.



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News from:

CIAO Research Groups

Combinatorics, Graphs & Network Topology (CGANT)

IWONT 2005

The International Workshop on Optimal Network Topologies (IWONT 2005) was held in Ballarat, from 28 November to 2 December 2005.

Workshop topics included Degree/Diameter Problems, Graphs and Digraphs close to Moore Bound, Connectivity, Pancyclicity, Construction Techniques for Large Graphs and Digraphs, and Computer Based Generation of Large Graphs and Digraphs.

The workshop Co-Chairs were Professor Brendan McKay (ANU) and Professor Mirka Miller. Plenary Speakers were Professor Charles Delorme, France, Professor Geoffrey Exoo, USA, Professor Jozef Siran, New Zealand, Professor Paul Hafner, New Zealand, and Professor Joan Gimbert, Spain.

Other Invited Speakers included Professor Evelyne Flandrin, France, Professor Zdenek Ryjacek, Czech Republic, Dr Sanming Zhou, University of Melbourne, and Dr Yus Cholily, Indonesia.

The workshop was a great success. It also looks as if we will be responsible for starting a new series of workshops, with IWONT 2006 to be held in Oberwolfach, Germany, and IWONT 2007 to be held in Barcelona, Spain.

Visits to Overseas Universities

Professor Mirka Miller and Dr Joe Ryan have recently visited the following universities:

- 12-23 December 2005: University of La Laguna, Tenerife, Spain (Professor Pino Caballero Gil and the CryptULL research group)
- 1-16 January 2006: University of West Bohemia, Plzen, Czech Republic (Professor Zdenek Ryjacek, Dr Tomas Kaiser, Dr Roman Kuzel)
- 17-19 January 2006: Slovak Technical University, Bratislava, Slovakia (Professor Kozef Siran, Professor Oto Grosek).



Data Mining & Informatics Research Group (DMIRG)

ADRAC Project

Outcomes of the ADRAC project, which involved data mining for relationships between drugs and adverse reactions, are being considered for commercialisation. Robert Crompton has put a proposal to the Board of ICA for \$50k to initiate this. Currently a terms sheet is being considered by the University.

Shell Project

Dr Adil Bagirov recently visited Shell in The Netherlands, and has made progress in gaining agreement for funding from Shell for a CIAO research program.

VPAC

The eResearch project co-ordinated by VPAC and involving CIAO, LaTrobe University, Deakin University, the Royal Children's Hospital and the Cystic Fibrosis Foundation has had issues with the quality and amount of data. However, some interesting insights have been suggested and are being considered by the Royal Childrens' Hospital.

Decision Support

Plans are proceeding for a joint study with Ballarat Health Services and the School of Nursing at the University of Ballarat, looking at the effect of computer representations of knowledge on student learning.

Computer Intelligence & Pattern Recognition

Work on the development of new neural learning algorithms, based on CIAO developed optimisation techniques, has produced good results, with many papers published in this area and much interest shown from the neural learning community.

Techniques in modular neural networks are being developed, and there is potential for these to be applied to water and environmental modelling, as well as a variety of other areas.

Dr Rana Ghosh organised a Workshop on Pattern Recognition at the Artificial Intelligence Conference 2005.

Ontology Engineering

Work in this area is progressing well, with a paper being accepted at the Australasian Ontology Workshop, and a submission to a special issue of the Journal of Human Compute Studies.

Text Categorisation

PhD Student Bahador Ofoghi presented a paper on passage retrieval at Australian Computer Science Week in Hobart, in January 2006.

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Health Informatics

Work on the Joint Replacement project with St John of God Hospital is progressing well.



Distributed Simulation Laboratory (DSL)

XMSF Tool Chain Contract

This \$85,000 contract has now been successfully completed. Tim Pokorny and Michael Fraser have reported to the Australian Defence Force and to ITMS.

This contract involved the Defence Science and Technology Organisation (DSTO) Adelaide, where the Australian Virtual Ship is based. The Virtual Ship is a large HLA-based model, in which many aspects of naval warfare are simulated.

The project set out to provide means by which this particular HLA simulation could be observed and controlled through web-connected devices.

DSL Membership

The DSL Research Group has three new staff members:

➤ **Mr Chris Nelson**

Chris focuses on teaching and research of computer games, and he represents a significant addition to the expertise of the DSL team.

➤ **Dr Long Jia**

Long's research efforts will commence upon completion of his Graduate Certificate of Education.

➤ **Mr Sunam Pradhan**

Sunam has joined the DSL very recently, and discussions are proceeding on his proposed contribution to the Group.

DSL Research Students

- David Andrews has formally announced his Intention to Submit his PhD thesis.
- Tim Pokorny's work is proceeding well.
- Two new PhD students are commencing their studies – Lance Burns and Adam Hassell.

First Class Honours

Congratulations to Lance Burns for his work in Honours. Examiners felt that his thesis was one of the best they had ever seen.

Honours Candidates in consideration

- Bruce LeMarshall is commencing Honours studies within the DSL.

Computer Games / Virtual Reality

The DSL has had a long-term interest in the overlap between computer games and distributed simulation technologies.

This interest is shared by our DSTO connections and by the SIAA (Simulation Industry Association of Australia), who have planned a joint session with the GDAA (Games Development Association of Australia).

Chris Nelson, as a new member of the DSL, will bring a significant focus to this area, and as a result the following directions are being explored:

~ **Open Source Games Engine**

The adoption, or development, of an Open Source Games Engine will lead to benefits in teaching, research and development of games. Lance Burns conducted an evaluation of a US Navy engine, Delta3D and rapidly concluded that an alternate solution, based on the Open Source Ogre3D platform, would in many ways be better.

~ **VPAC Virtual Reality**

The emerging VPAC Virtual Reality project implies a presentation front end, which shares much with the Games Engine described above. But critically from the DSL point of view, a simulation back end, where HLA would be a strong contender as an interoperability standard.

ADF Anthropometry Project

The project is at an important stage where the human modelling simulation runs are about to commence. These runs will model crew members, scanned by UniSA, in crewstations scanned by SKM (Sinclair Knight Mertz) using the Jack application.

Extensive modelling code has been developed by UB and Permian, our sub-contractors, are well advanced in the development of the Java application that will front-end this process for subsequent ADF use.

Jack and HLA

Dr Philip Smith is progressing investigations into the benefit of providing an HLA interface to Jack, the human modelling package employed in the ADF project.

Such an interface would enable the Human Modelling expertise and excellence of Jack to become available within arbitrary HLA simulations.

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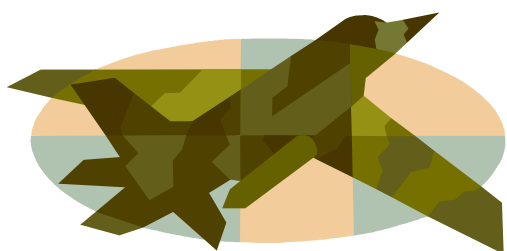
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A proof-of-concept, strongly influenced by discussions with Sports Australia, is being undertaken by Sina Peszesk as his Masters by Coursework project.

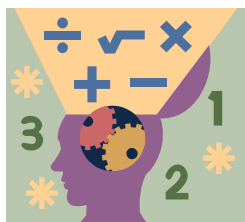
The approach that has been taken – a socket-based set of binding to the HLA RTI – is one that implicitly supports many major application software packages, since the extent and nature of decoupling is one that will support most programming languages.



Mathematical & Statistical Analysis Research Group (MASARG)

Optimization Algorithm Software

Dr Adil Bagirov and Ms Moumita Ghosh have recently experienced major success, with their optimization algorithm software being accepted for use by a global petroleum company. Watch this space for further developments.



Collaborative Centre for e-Health (CCeH)

ADRAC Phase 2: Adverse Drug Reactions

This project involves the electronic transmission of adverse drug reactions from general practice desktop software to the Therapeutics Goods Administration (TGA) in Canberra. The information is sent as an encrypted HL7 message. This project is now close to completion, with the final report being presented to TGA this month.



Barwon Division of General Practice

This project involves the electronic transfer of diabetes management reports from general practice desktop software to divisional central repositories.

It involves developing and piloting the electronic transfer of diabetes information and then be rolled out to the remaining general practitioners in northern New South Wales. The project is due to be completed by May 2006.



Educational Research in Mathematics, IT and Statistics Cluster (CERMITS)

South Korea Mathematics Conference: December 2005

Dr Robyn Pierce presented the Keynote Address at the 10th Asian Conference on Technology in Mathematics, Cheong-Ju, South Korea in December 2005. Her topic was "Using CAS to enrich the teaching and learning of mathematics".

Information Security Cluster (INSECT)

Spain Information Security Conference: December 2005

Professor Mirka Miller and Dr Ljiljana Brankovic (Newcastle) organised a Special Session called TAPAS (Trust, Access, Privacy and Security) at the Information Security, Communications and Computers (ISCOCO 2005) conference held in Tenerife, Spain, 16-18 December 2005. Professor Miller was the Chair.

There were eleven accepted papers, ten of them presented at TAPAS.

Professor Miller's PhD student Geoff Skinner won the Best Student Paper prize at ISCOCO 2005.



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Intelligent Finance Cluster (IFC)

China Visit

Dr Heping Pan visited the Finance Research Centre of China (FRCC), Southwest University of Finance and Economics (SWUFE), Chengdu, China during December 2005 / January 2006.

Dr Pan presented the concepts, theory and vision of Intelligent Finance with the prediction of global financial markets to the directors, staff and postgraduate students of FRCC and SWUFE, through three seminars.

This presentation has inspired a powerful wave of Intelligent Finance propagating from FRCC to the Chinese intellectual community of finance and economics.

It is said that thirty to fifty per cent of senior managers in all the banks in China were graduates from SWUFE, which was the first university with a focus on finance and economics under the management of the Central Bank of China. Their alumni network is their most precious resource.

Through presentations and discussion, the SWUFE University has decided to support the establishment of the International Institute for Financial Prediction China (IIFP China) as a part of FRCC.

IIFP China is now a partner organisation of IIFP Australia, which has connections with CIAO's Intelligent Finance Cluster.

The main activities and results from this China trip were:

- A seminar and follow up discussions with the staff of FRCC.
- Two seminars presented to postgraduate students.
- Discussions regarding a possible visit to Australia by senior management of SWUFE.
- Positive discussions about IIFP and our future collaboration.
- Discussions about the organising and hosting of two academic conferences during 2006:
 - The First Chinese Workshop on Intelligent Finance (CWIF1), July 2006.
 - The Second International Workshop on Intelligent Finance (IWIF 2), December 2006.
- Discussions about establishing two new journals: International Journal of Intelligent Finance and Journal of Computational Intelligence.



Conferences & Seminars

India Software Technology Conference: December 2005

Dr Prabhu Manyem attended the 25th FST-TCS (Foundations of Software Technology and Theoretical Computer Science) conference during December 2005 at Hyderabad, India.

He also visited Professor Jaikumar Radhakrishnan at the Tata Institute of Fundamental Research, Mumbai, India, during December 24-30, 2005. The outcome was a significant enhancement to Prabhu's paper on Syntactic Characterisation of Polynomial time Optimisation Classes.

Brisbane Lifelong Learning Conference: December 2005

Ms Sally Firmin and Dr Charlynn Miller presented a paper entitled "Facilitating the development of lifelong learners through e-communication tools" at the 2005 ASCILITE (Australasian Society for Computers in Learning in Tertiary Education) Conference in Brisbane in December 2005.

Their presentation, along with the three others in their Group, was voted "Best Group of Presentations" at the Conference.

Spain Information Security Seminar: December 2005

Professor Mirka Miller and Dr Joe Ryan visited the research group CryptULL, and each presented an Information Security seminar each at the University of La Laguna, Tenerife, Spain, in December 2005. Their seminar topics were on different aspects of "Security of Statistical Databases".

ACSW 2006: January 2006

The School of ITMS was well represented at Australian Computer Science Week 2006, which was held in Hobart, Tasmania.

We will host ACSW 2007 in Ballarat, and took the opportunity to gain useful information on running this major event.

Czech Republic Seminars: January 2006

Dr Joe Ryan gave a seminar at the University of West Bohemia, Plzen, Czech Republic on 10 January 2006 on "Eccentric Digraphs".

Professor Miller gave a seminar at the University of West Bohemia, Plzen, Czech Republic on 10 January 2006 on the topic "Usability of Secure Statistical Databases".

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Tenders / Consultancies / Grants

ARC Linkage Grant Applications

Two applications were submitted in late 2005:

Chief Investigators: Dr Alex Rubinov & Dr Musa Mammadov
Title: "Utilising global optimization techniques to determine the most efficient use of building/floor space to accommodate a given office design".
Industry partner: The Kann Finch Group, a Sydney-based architectural firm.



Chief Investigators: Dr Heping Pan & Professor Fawang Liu (QUT)

Title: "Multilevel Stochastic Dynamic Process Models and Applications in Global Forex Market Analysis and Surveillance".

Industry partner: Alt-FX, a Sydney-based forex hedge fund.



Seed Funding from CIAO

We congratulate the following staff members, who have recently received project seed funding from CIAO:

- ✓ Dr Liping Ma: \$3,000
Project: Text Classification with Decision Tree on Reuters
- ✓ Dr Nadia Sukhorukova and Dr Julien Ugon: \$7,000
Project: Nonsmooth optimisation in data analysis: numerical experiments
- ✓ Dr Prabhu Manyem and Dr Xinwen Wu: \$6,300
Project: Optimisation and Complexity Issues in Coding
- ✓ Dr Alex Kruger: \$4,000
Project: Stationarity and Regularity of Sets and Mappings with Applications to Optimization

Consultancies

Transfield Services:

BSL Maintenance Resource Optimization

Transfield Services Limited (TSL) has an alliance contract with BlueScope Steel Limited (BSL), based in Port Kembla, New South Wales, Australia.

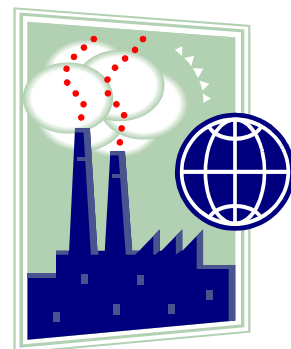
In particular, TSL is responsible for providing a range of maintenance services to BSL. This involves planned and unplanned work.

The goal of the project is to assist TSL in work planning effort and manpower resource scheduling. TSL have utilised maintenance staff for 1.183 million man hours (average 600 employees/week) for the twelve months to October 2005.

The task of maintenance resource optimization will be based on Workorder data collected by TSL over the past four years, through their alliance with BSL. It will also utilise TSL expert knowledge.

The initial three-month project is to undertake historical analysis of Workorder data and to develop a simulation model, on which TSL can assess more effective maintenance programming. A longer term project is also proposed, in which the simulation model will be developed into an optimization model.

CIAO personnel involved: Professor A Rubinov, Dr N Sukhorukova, Mr Wayne Hurst



Information City Australia – ADRA Commercialisation

CIAO has received notification from Information City Australia (ICA) that it was successful in gaining \$50,000 in funding.

This funding will be used to develop a Business Plan for the Adverse Drug Reaction (ADRA) project, which will be incorporated as a company, with a further \$150,000 reserved for follow on funding.

The project will commercialise CIAO knowledge which has been developed over the past three years, in the application

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of optimization and data mining techniques to determining suspected adverse drug reactions.

CIAO personnel involved: Associate Professor J Yearwood, Dr M Mammadov, Mr S Ivkovic, Mr W Hurst.



JustSys - E-Ethics

This project involves the development of an internet-based electronic lodgement and decision support system, to streamline the ethics application process.

This on-line Ethics application system (E-Ethics Support System) supported by a knowledge base is expected to lead to productivity increases for universities, hospitals and government agencies. It will mean that valuable staff (administration staff, ethics committee staff and researchers) will spend less time on each application.

The project is in the final stages of completion.

CIAO personnel involved: Dr A Stranieri, Associate Professor J Yearwood.



Community Based Projects

St John of God Hospital – Joint Replacement

This project is developing a knowledge modelling framework, to assist SJOG in determining best practice in joint replacement surgery.

A literature review has commenced, and interviews with surgeons, patients and medical professionals have taken place.

It is planned that one or two findings of the Scoping Study will be further advanced through external grant funding. The

findings are currently being summarised, and the project is due for completion this month.

CIAO personnel involved: Associate Professor J Yearwood, Dr M O'Brien.



ITMS Colloquia & Seminars

ITMS Colloquia Series 2006

The 2006 Colloquia Series has commenced, and continues to attract diverse speakers and a high level of professional expertise.

Recent visiting speakers have included:

- Associate Professor Tuan Pham, James Cook University, Pattern Recognition Applied to Life Science
- Dr Gitesh Raikundalia, Victoria University, Group awareness for real-time distributed collaborative authority
- Professor Berndt Kummer, Humboldt University Berlin, Solving large linear systems via Julia Robinson's modified Algorithm
- Professor Alf van der Poorten AM, ceNTRe for Number Theory Research, Sydney, Paperfolding, automata, and rational functions
- Professor Heiko Schroder, RMIT, The Future of High Performance Computing



Publications

Books, Chapters & Papers: Accepted & Published

Professor Sid Morris

Professors Sid Morris and Karl Hofmann are delighted that the international publisher, Walter de Gruyter, has decided to publish a second, revised, updated, and expanded version of their 835 page book "The Structure of Compact Groups", which was first published in 1998.

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Dr Alex Kruger

Dr Alex Kruger has produced the following publications:

- A small book titled Operating System MS Windows 2000 Professional, Minsk, 2005. (with S. A. Chernishova, L. G. Shipulina; in Russian). ISBN 985-6741-44-0.
- Two papers titled Stationarity and regularity concepts for set systems accepted for publication in Proc. IFIP2005-TC7 Conference, vol.2., and Stationarity and regularity of real-valued functions (University of Ballarat. SITMS Research Report 2005/14) submitted to Applied and Computational Mathematics.
- His paper "About regularity of collections of sets" (University of Ballarat, SITMS Research Report 2005/03) has also been accepted for publication in Set-Valued Analysis.

Dr David Yost

Dr David Yost's paper "Colocality and twisted sums of Banach spaces" with H. M. Jebreen, F. B. H. Jamjoom, was published online on 2 December 2005 by the Journal of Mathematical Analysis and Applications, doi:10.1016/j.jmaa.2005.11.00, and the printed version will appear soon.

Dr Robyn Pierce

Pierce, R., Stacey, K., and Barkatsas, A. (in press 2005). A scale for monitoring students' attitudes to learning mathematics with technology. *Computers & Education*.

Pierce, R. (2005). Linear functions and a triple influence of teaching on the development of students' Algebraic Expectation. In Chick, H. L. & Vincent, J. L. (Eds.). *Proceedings of the 29th Conference of the International Group for the Psychology of Mathematics Education*, Vol. 4, pp. 81-88. Melbourne: PME.

Herbert, S. and Pierce, R. (2005). Potential of technology and a familiar context to enhance students' concept of rate of change. In P. Clarkson, A. Downton, D. Gronn, M. Horne, A. McDonough, R. Pierce and A. Roche (Eds.). *Building Connections: Theory, Research and Practice*. (Proceedings of the 28th Annual Conference of the Mathematics Education Research Group of Australasia). Vol. 2 pp. 435-442. Sydney: MERGA Inc.

Pierce, R. (2005) Algebraic Insight underpins the use of CAS for modelling. *The Montana Mathematics Enthusiast*. 2(2) 107-117.

Pierce, R., Stacey, K., and Ball, L. (2005) Mathematics from still and moving images. *Australian Mathematics Teacher*. 61(3), 26 – 31.

Herbert, S., and Pierce, R. (2005). Building students' understanding of rate of change: year 7 to year 10. In *Mathematics – Celebrating Achievement*. (Proceedings of the 42nd Annual Conference of the Mathematical Association of Victoria). Melbourne: MAV.

Andrews, M., Herbert S. and Pierce, R. (2005). Real Contexts, Graphics Calculators and Linear Functions. In *Mathematics – Celebrating Achievement*. (Proceedings of the 42nd Annual Conference of the Mathematical Association of Victoria). Melbourne: MAV.

Garner, S. and Pierce, R. (2005). CAS: to everything there is a season. In *Mathematics – Celebrating Achievement*. (Proceedings of the 42nd Annual Conference of the Mathematical Association of Victoria). Melbourne: MAV.

McCann, B. and Pierce, R. (2005). BMX bicycles, dirt jumps, movies and mathematics. In *Mathematics – Celebrating Achievement*. (Proceedings of the 42nd Annual Conference of the Mathematical Association of Victoria). Melbourne: MAV.



Professor Mirka Miller & Collaborators

V. Mishra, A. Stranieri, M. Miller, J. Ryan, Knowledge Based Regulation of Statistical Databases, *WSEAS Transactions on Information Science and Applications* Vol. 3, No 2, pp 239 - 244, 2006.

G. Skinner, M. Miller, Managing Privacy, Trust, Security, and Context Relationships Using Weighted Graphs, *WSEAS Transactions on Information Science and Applications* Vol. 3, No 2, pp 283 - 290, 2006.

V. Mishra, A. Stranieri, M. Miller, J. Ryan, Context dependent security enforcement of statistical databases, *Proceedings of 4th WSEAS International Conference on Information Security, Communications and Computers (ISCOCO 2005)* Puerto De La Cruz, Tenerife, Canary Islands, Spain, December 2005.

G. Skinner, M. Miller, Graph representation of access controls for managing privacy, trust, and security requirements, *Proceedings of 4th WSEAS International Conference on Information Security, Communications and Computers (ISCOCO 2005)* Puerto De La Cruz, Tenerife, Canary Islands, Spain, December 2005.

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Bruce Le Marshall, Mirka Miller, Privacy and e-Health in Australia, *Proceedings of 4th WSEAS International Conference on Information Security, Communications and Computers (ISCOCO 2005)* Puerto De La Cruz, Tenerife, Canary Islands, Spain, December 2005.

Dr Heping Pan

Heping Pan (2005): A Theoretical System of Intelligent Finance - Financial Information Fusion, Multilevel Dynamic Patterns, Total Risk Management and Financial Strategic Analysis. Technical Report IIFP-TR-2005-2, IIFP.

Heping Pan (2006): Financial Information Fusion toward Unification and Integration of Economic, Fundamental, Technical, News and Strategic Analysis of Financial Markets. Technical Report IIFP-TR-2006-1, IIFP.

Heping Pan and Luoxi Pan (2006): Business Cycles, Sector Rotations and Macrowave Investing. Technical Report IIFP-TR-2006-2, IIFP.

A/Professor John Yearwood & Dr Andrew Stranieri

John Yearwood & Andrew Stranieri (2006): The Generic/Actual Argument Model of Practical Reason Decision Support Systems, 41(2), pp.358-379.

Post-Graduate News

Welcome to New Arrivals

We welcome the following new students to ITMS:

- ✓ Mr Cameron Foale
Degree: PhD
Topic: Realistic Acoustic Environments for Virtual Game Worlds
Principal Supervisor: Dr Heping Pan
Associate Supervisor: Dr Rana Ghosh
- ✓ Mr Adam Hassell
Degree: PhD
Topic: The role of HLA in game engines in simulation and unmanned vehicle control
Principal Supervisor: Dr Phil Smith
Associate Supervisor: Dr David Stratton
- ✓ Mr Anthony Quinn
Degree: PhD
Topic: Mining feature value weights, optimisation and visualisation techniques
Principal Supervisor: Dr Andrew Stranieri
Associate Supervisor: A/Prof John Yearwood

- ✓ Mr Lance Burns
Degree: PhD
Topic: HLA as a Platform for Distributed Artificial Intelligence
Principal Supervisor: Dr Phil Smith
Associate Supervisor: Dr David Stratton

- ✓ Mr Nial Muecke
Degree: PhD
Topic: Agent Based Narrative
Principal Supervisor: Dr Andrew Stranieri
Associate Supervisor: TBA

- ✓ Mr Mofakharul Islam
Degree: PhD
Topic: Fast colour image segmentation technique for interactive robots
Principal Supervisor: Dr Rana Ghosh
Associate Supervisor: A/Prof John Yearwood

- ✓ Mr Asef Nazari Ganjehlou
Degree: PhD
Topic: Examination of some problems of global optimization
Principal Supervisor: Prof Alex Rubinov
Associate Supervisor: Dr Adil Bagirov

Increase in Post-Graduates

This year we will have 42 post-graduate students studying with the School of ITMS – a record number!

ICT Scholarships

Congratulations to the following recipients of ICT Scholarships, awarded in December 2005 by the Victorian Department of Multimedia:

- Ms Alyx Macfadyen
- Mr Adam Hassell
- Mr Lance Burns
- Mr Anthony Quinn



Thesis Acceptance

Jason Giri's PhD thesis entitled "Non-Linear Analogues of Lagrange Functions in Constrained Optimization" was recently passed by his examiners. Congratulations Jason!

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Staff News

New Staff Members

We welcome the following new staff members:

- **Ms Moumita Ghosh**

Moumita has been appointed as a fixed-term Lecturer in ITMS, and will divide her time equally between teaching and research.

She is also close to submitting her PhD thesis titled "Development of non-linear optimization techniques for production optimization". Moumita is married to Dr Rana Ghosh, an ITMS Lecturer and Researcher, and they have a beautiful one year old son.

- **Dr Siddhi Kulkarni**

Siddhi has been appointed as a Lecturer in ITMS. He obtained his PhD from Griffith University in Brisbane, and has been working as an Assistant Professor for three years at Npissing University in Canada.

He has taught object-oriented programming, data structures, computer graphics, project management, multimedia systems, software engineering and distributed systems. He also has some years of industry experience.

Siddhi's main research interests are multimedia techniques, computational intelligence, image and video retrieval and bioinformatics. He has published about 20 conference and journal articles.



General News

Install Fest – Linux Linux Users of Victoria (LUV)

We recently hosted this event with Linux Users of Victoria, where free software, installation and technical advice was provided to participants.

Computer professionals from LUV provided the free operating system and suite of applications to raise awareness of the product in regional Victoria. This "Install Fest" is the first of several to be held in Victoria in 2006.

Advocates claim the open-source nature of Linux means that the system is more stable and secure than competing proprietary products, such as Microsoft Windows.

Since being released in 1991, Linux has captured more than 40% of the high-end server market, and is increasingly popular as an end-user desktop system.



Visitors to CIAO

Professor Mirka Miller has hosted recent visits from the following colleagues:

- Professor Zdenek Ryjacek, University of West Bohemia, Plzen, Czech Republic.
- Dr Joan Gimbert and his PhD student Nacho Lopez, University of Lleida, Spain.
- Professor Evelyne Flandrin, University Paris-Sud, France.
- Dr Yus Cholily, UMM, Malang, Indonesia.

Prague Visitor

Dr Alex Kruger's colleague from Prague – Professor Jiri Outrata – visited UB for about ten days in December 2005. They worked solidly during this period and are now preparing a joint paper. They believe it will give rise to a new direction of joint research.

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Kazakhstan Visitor

Dr Fuad Hajiyev, Dean of Engineering, at Sulyman Demirel, University, in Almaty, Kazakhstan visited us in February 2006. He met primarily with Frank De Luca and Dr Eldar Hajilarov. The purpose of his visit was to gain a better understanding of the University of Ballarat, the School of ITMS, our staff and our programs.

China Visitors

Professor Wei Dongping and Professor Yong Shi, Director of Chinese Academy of Sciences Research Center on Data Technology & Knowledge Economy, visited us in February 2006. They also presented a Seminar titled "Multiple Criteria Optimization Approaches to Data Mining Techniques and Its Applications".

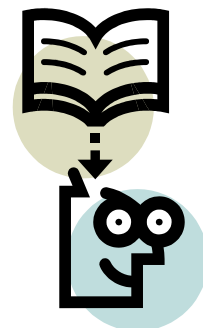
Professor FU Ting-lin, Professor and Chancellor of Bohai University, Vice Professor REN Li-juan, Director Foreign Affairs Office of Bohai University, and Mr Yifeng Zhang - Director - Sydney International Business Liaison Centre visited us in March 2006. The purpose of their visit was to cement our partnership with Bohai University in China.

Oman Visitors

Two gentlemen visited us in March 2006 from the Middle East College of Information Technology in Oman. They were Mr Ashwin John Kalliath, Assistant Registrar and Mr Ali Said Ali Al Araimi, Manager – Quality Assurance. The purpose of their visit was to discuss building links with the University of Ballarat.

Research Reports : 2006

- 2006/01 Optimization solvers and problem formulations for solving data clustering problems, Julien Ugon, January 2006
- 2006/02 Constrained Nonlinear and Semismooth Equations and Global Optimization, Musa Mammadov, Liqun Qi & Fusheng Bai, January 2006
- 2006/03 Coverage in WLAN: Optimization Model and Algorithm, S. Kouhbor, J. Ugon, M. Mammadov, A. Rubinov & A. Kruger, February 2006
- 2006/04 Coverage in WLAN with Minimum Number of Access Points, S. Kouhbor, J. Ugon, A. Rubinov, A. Kruger, & M. Mammadov, February 2006
- 2006/05 Nonsmooth Optimization for the Placement of Access Points to Enhance Security in WLAN, S. Kouhbor, J. Ugon, M. Mammadov, A. Rubinov & A. Kruger, February 2006



All ITMS staff members and postgraduate students are encouraged to contribute to the next edition of the CIAO Newsletter

Examples of newsletter items are: projects in progress, papers accepted, research in process, publications, grants, seminars, visitors to ITMS, visits, scholarships, reports from school research groups / centres, events, conferences, new discoveries, and general items of interest

All items should be sent to Elizabeth Matuschka (ematuschka@staff.ballarat.edu.au) by 19 May 2006