

ASOR News — May 2014

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Upcoming OR Seminars

ASOR Melbourne Series

4 June 2014: Xiaodong Li (RMIT). Global Optimisation. 5.30pm in RMIT Room 8.9.66 and other sites by Access Grid.

18 June 2014: Florian Stock (TU Berlin & CSIRO). Network Design and Industrial Ecology. 5.30pm

in RMIT Room 8.9.66 and other sites by Access Grid.

16 July 2014: Dudley Foster (ASOR Honorary Life Member, and Sessional Project Supervisor at University of Edinburgh). *Reflections on a Lifetime of OR and its Application in Private Life*. 5.30pm in RMIT Room 8.9.66, and other sites by Access Grid.

NICTA / ORG Seminar Series

23 May 2014. David Rey (UNSW), *Transit Route Design Solved with Wireless Data Collection Algorithms*. 12pm, NICTA in Kensington NSW, and other sites by web. See further information later in this newsletter.

AMSI/ANZIAM AGR National Seminars

For information about these events, visit <http://www.amsi.org.au/index.php/research-a-higher-education-mainmenu/access-grid/national-seminar-series>.

Queensland News

Paul Corry

Queensland branch held its AGM on Thursday April 10th at QUT in Brisbane. There was not much change to the committee from last year, but some new blood has been injected into the committee with two new student representatives. The new committee is:

President: Andy Wong (QUT)

Secretary: Kari Stuart (AECOM)

Treasurer: Bard Casey (QUT)

Committee Members: Monica Barbu (Aurizon), Kai Helge Becker (QUT), Paul Corry (Aurecon), Erhan Kozan (QUT), Sam Nicol (CSIRO)

Student Reps: Tony Cox (QUT) and Belinda Spratt (QUT)

QUT staff and students make a big contribution to the committee. It would be great to see committee members from other universities and other organisations in the future. We welcome all

members to join our committee meetings, whether in the committee or not.

Colin Eustace of Aurecon presented a seminar after the AGM, entitled “A framework for optimising resource supply chains”. The presentation focussed on NPV based optimisation of resource supply chain projects at the concept stage. He demonstrated the importance of optimisation using quantitative economic analysis rather than rules-of-thumb and ad-hoc decision making. Along the way, Colin raised some serious questions over long-held sacred beliefs on how resource supply chains should be designed. In particular, Colin highlighted the economic benefits of long-distance conveyor over rail in the types of systems where rail generally dominates. The seminar was recorded through QUT’s AV system and we are endeavouring to overcome some technical hurdles and upload it to the QLD ASOR website.

Student News

Cameron MacRae

Mohsen Reisi (Newcastle) has submitted his PhD thesis. **Mohsen Songhori** (Melbourne) has also submitted and has commenced a ten week placement with the Operations Research team at CSIRO Clayton. **Ehsan Mohebi** has also commenced work with CSIRO Clayton, and **Hosein Khakbaz** with CSIRO Sydney, as part of the same post-PhD program.

Alan Lee (Newcastle) has completed his confirmation of candidature. **Martijn Van der Merwe** (RMIT) successfully completed his mid-candidature panel review.

Newcastle welcomes two new PhD students: **Fabian Rigterink** and **Luke Marshall**. At RMIT **Nigel Clay** has commenced a PhD.

Calling Student Members

Paul Lochert

We wish to validate the data-base of the Melbourne chapter. We did send out re-confirmation notices in Dec 2013 for this year, some have replied and we understand there exist at least some students who did not receive those notices. This suggests that some errors exist in our data-base.

If you believe you are a student member and are still a student, please send me a brief email

(plochert@bigpond.net.au) confirming your ongoing membership, if your contact details have changed include these.

If you are no longer a student I invite you to convert your student membership to full membership for the annual subscription of \$45 or if your career has changed notify me to remove you from the data base.

AMS Student Conference

Rachel Bunder

Australian Mathematical Sciences Student Conference is an annual conference for all Australian postgraduate and honours students in the mathematical sciences. The conference aims to bring students together, enabling them to communicate their work, facilitating dialogue, and encouraging collaboration, within a friendly and informal atmosphere.

This year the conference is being held at the University of Newcastle, July 2nd - 4th. As it is being held at Newcastle, we are expecting to have an Operations Research session. Registration is now open.

John Hooker’s ASOR Seminar

ASOR Melbourne had the pleasure on May 14 of hosting John Hooker for our monthly seminar (at RMIT, to Newcastle by Access Grid, and some intrepid souls at QUT via the web). John Hooker is a Professor in the Tepper School of Management at Carnegie Mellon University in the USA.

John described his and his colleagues’ work in developing a new general-purpose optimisation solver based on the concept of forming and enumerating Binary Decision Diagrams. In the main, this approach can best be applied to problems where partial solutions can be expressed in terms of states, and where useful relaxations to the problem can be arrived at through “merging” states. Graph colouring and task sequencing are good examples of the kind of problem for which BDD-based approaches are competitive, and indeed can significantly outperform, the best commercial MIP solvers. The article preprint available at http://www.andrew.cmu.edu/user/vanhoeve/papers/discrete_opt_with_DDs.pdf is a good starting point for the interested reader.

John spent time with many of the Melbourne-based OR groups during 10 days in the city, and through this formed or reinforced a number of collaborations.

ASOR Melbourne / Newcastle Student Event

Alan Lee

On the 16th of April, ASOR Melbourne at RMIT and the University of Newcastle jointly held a student led event, designed to promote Operations Research and industrial opportunities to undergraduate students. There was a good turn out, with approximately 30 attendees, including undergraduate students keen to learn about future possibilities. They seemed to enjoy discussions both with academic staff members, and those with former industry/'real world' experience. We look forward to the next event.

Upcoming NICTA-ORG Seminar

Transit Route Design Solved with Wireless Data Collection Algorithms. **David Rey**, UNSW. 12pm-1pm AEST, 23 May 2014.

The speaker will be live from: NICTA Neville Roach Laboratory, Board Room Level 4. 223 Anzac Pde.

Kensington, NSW.

Video Conference Sites will include Monash University, Caulfield Campus, Board Room (room H.690), Level 6, Building H; and NICTA Victoria Research Laboratory, 115 Batman St., West Melbourne, VIC.

This talk is also available live via streaming over the web and dial-in. To join by video: IP dial 202.158.195.138; SIP dial 61262112667@aarnet.edu.au; ISDN dial +61262112667. To join by phone, dial (02) 62112667. The Seminar will also be viewable live (and archived) at <http://vmc.aarnet.edu.au>.

The Transit Route Network Design Problem (TRNDP) and its variants, aiming for economically viable and efficient transit routes in urban areas, has been attracting many contributions in recent years and continues to be an active research field. This is mainly caused by the intractability of the underlying optimization problems in large-scale transportation networks, generally leading to the usage of heuristic schemes to build good practical solutions. In this paper we present a relationship between the TRNDP and the problem of data collection in wireless sensor networks, and propose an innovative solution approach based on a recently proposed algorithm in that domain. The original solution algorithm is adapted to urban transportation networks and tests



At the RMIT side of the student event in April, Martin (standing, centre) delivered a seminar as the formal part of the event. In the hands of Cam (standing, left) and Alan and Rachel (Newcastle), this year's student event was another success, and resulted in a dozen new or renewed members to ASOR.

are carried out on large scale datasets on single route variant of the TRNDP. The results obtained show that the solution approach can be efficiently tuned to meet specific route design objectives and provide balanced solutions.

David Rey is a post-doctoral researcher in transport engineering at the Research Center for Integrated Transport Innovation (rCITI) at the University of New South Wales (UNSW). He joined UNSW after obtaining his PhD in operations research from the University of Grenoble (France) during which he studied conflict resolution strategies in air traffic management. His key research interests lie in resource allocation schemes in transportation networks, routing algorithms, mathematical programming as well as fair optimization.

Postdoc in Integer and Stochastic Integer Programming

Applications are invited for a postdoctoral research position working on a project funded by the Australian Research Council, titled "Decomposition and Duality: New Approaches to Integer and Stochastic Integer Programming". The project is a collaboration between Professors Andrew Eberhard (RMIT, Australia), Natashia Boland (University of Newcastle, Australia) and Jeff Linderoth (University of Wisconsin, Madison).

The position is based at RMIT University, School of Mathematical and Geospatial Sciences, in Melbourne, Australia, under the supervision of Prof. Eberhard, in collaboration with Profs Boland and Linderoth.

The Postdoctoral Fellowship will be paid under ARC Discovery Project DP140100985. The successful candidate will be employed at level A8 and the successful applicant will receive \$78,349 per annum. The appointment is initially for 1 year. Funding is available for additional years by mutual agreement.

Applications for this fellowship will be accepted until a suitable applicant has been found. To view the position description and find instructions as to how to lodge your application, go to <http://yourcareer.rmit.edu.au/> and type 549008 into the Keyword Search field. For enquiries, please contact Prof. Andrew Eberhard (andy.eberhard@rmit.edu.au; +61 3 9925 2616)

Background. The successful applicant will join a team of researchers at RMIT University and the University of Newcastle working on of this project. This fellowship will be administered at RMIT and the candidate will work under the supervision of Prof. Andrew Eberhard and Prof. Natashia Boland. One of Australia's original educational institutions founded in 1887, RMIT is now the nation's largest tertiary institution. The School of Mathematical & Geospatial Sciences draws together disciplines involving the collection of data with the analysis of data and the understanding and optimisation of systems through modelling and visualisation.

Project aims. Because of their rich modelling capabilities, integer programs are widely used in industry for decision making and planning. However their solution algorithms do not have the maturity of their cousins in convex optimization, where the theory of strong duality is ubiquitous. Efficient methods for convex optimization under uncertainty do not apply to the integer case, which is highly non-convex. Furthermore integer models usually assume the data is known with certainty, which is often not the case in the real world. This project looks towards the development of new theory and algorithms to enhance the analysis of integer models, including those that incorporate uncertainty, while also enabling the use of parallel computing paradigms.

Desired Skill Set. The successful candidate will hold a PhD in optimization, operations research, or closely related discipline, with strong advanced mathematical skills. Research experience in some aspect of optimization theory is essential, and knowledge of integer programming and stochastic programming theory and techniques are desirable.

Excellent computer programming skills in modern programming languages and experience in computing with optimization software are also desirable.

Positions at NICTA

The NICTA Optimisation Research Group is seeking outstanding researchers who have recently received their PhD to bridge the gap between research and industry in the areas of:

- Optimisation solvers for global nonlinear optimisation, mathematical programming, and constraint programming;

- Energy systems;
- Logistics and supply chains;
- Public transportation;
- Environmental and societal resilience.

The Optimisation Research Group is one of the leading optimisation research groups world-wide. You will work directly with researchers who have a long record of pushing the frontiers in optimisation and developing optimisation systems that have changed the way businesses operate.

Our goal is not only to recruit outstanding people, but also to create teams that enjoy working together in a dynamic and flexible environment. NICTA is an EEO employer and promotes a culture of diversity and equality. The Optimisation Research Group is striving for gender balance and we therefore specifically encourage women to apply for this position.

As a Researcher, you will contribute to projects with major industry/government partners in a variety of sectors. You will push the frontier of optimisation technology and contribute to the implementation of decision support systems that will have a critical impact on the Australian economy.

In addition, you will be expected to continue building upon your international reputation by publishing papers and attending top conferences. You will also have opportunities for graduate-level teaching and supervision of PhD students.

We are looking for candidates with a PhD in computer science, operations research, or related areas, a strong background in constraint or mathematical programming, and good modelling and programming skills. Experience in designing and implementing sophisticated optimisation solutions is highly desirable. Read more about the NICTA Optimisation Research Group on our website.

Competitive Salary: \$85K-110K Australian, incl. superannuation.

Duration: 2 years in the first instance.

Location: Canberra, Sydney, or Melbourne, depending on the application area. Relocation costs from overseas will be supported by NICTA, as well as the sponsorship of a working visa for the partner and dependents for the duration of the contract.

Apply via LinkedIn, and include a motivation letter, short research statement, and names of 3 referees

in your application (place all documents into one PDF or word document).

Please direct any queries to Alessandra Stasi (alessandra.stasi@nicta.com.au) or Pascal Van Hentenryck (pvh@nicta.com.au).

ISESS Conference, March 2015

The International Symposium on Environmental Software Systems was initiated in 1995 as a forum to present and discuss the fundamentals, progress and trends in this area in terms of methods, tools and state-of-the-art environmental informatics applications.

The next ISESS conference will be held in Melbourne, 25-27 March 2014. The organisers would be very pleased if you could consider submitting an abstract to their conference. Please mark the dates in your calendar, and keep watching the web-site: www.isess2015.org.

ASOR Ren Potts Medal and New Researcher Encouragement Award

These prestigious awards were instigated within ASOR many years ago, were regularly awarded in the past, but were unfortunately overlooked in 2011 and again in 2013. These awards will be restored in 2014 and the ASOR National Committee is making plans to award them bi-annually. To this end, the National Committee is now encouraging queries and nominations.

ASOR Ren Potts Medal

The Ren Potts Medal of the Australian Society for Operations research is intended to recognise individuals who have made outstanding contributions to theory or practice of OR in Australia. It is a national award restricted to Australian residents only.

ASOR New Encouragement Award

The ASOR New Encouragement Award is intended to recognise new researchers who have completed a research degree at Master or PhD level in OR, or in a related field with significant contribution to the advancement of OR from any Australian university. Normally candidates will be considered who completed all requirements for their degree in the preceding 12 months.

Mailing list and website changes

In conjunction with the newsletter becoming national, the ASOR National committee is planning to re-launch the ASOR website and all our mailing lists in the near future. For the website, we are planning for a unified national site that will use the content management system that is already being used by the ASOR Brisbane Chapter.

For email, we are looking to supersede all current email lists with a single national list hosted by Mailchimp (<http://mailchimp.com/>).

Look out for further advice/instructions on these upgrades during the next couple of months.

ASOR Melbourne email List

If you need to update your details for our mailing list, melbourne-list@asor.org.au, visit the web page at http://asor.org.au/mailman/listinfo/melbourne-list_asor.org.au, where you can maintain your information, subscribe or unsubscribe.

ASOR Linked-In Group

Members who have accounts LinkedIn should visit <http://www.linkedin.com/groups/Australian-Society-Operations-Research-4473262>, which covers ASOR nationally.

<p>CALL FOR PAPERS ISESS 2015</p>  <p>MELBOURNE Australia March 25-27 2015</p>											
<p>The ISESS conference series</p> <p>The International Symposium on Environmental Software Systems was initiated in 1995 as a forum to present and discuss the fundamentals, progress and trends in this area in terms of methods, tools and state-of-the-art environmental informatics applications. Over the years, it has also evolved into an important networking opportunity for academics, environmental professionals, and other interested parties. ISESS brings together researchers and practitioners dealing with environmental challenges and trying to provide solutions using forward-looking and leading-edge IT technology.</p> <p>ISESS is organised by Working Group WG5.11 <i>Computers and Environment</i> of the International Federation for Information Processing (IFIP).</p>	<p>Conference topics</p> <ul style="list-style-type: none"> Environmental modelling and decision making processes Computational and data-intensive methods in environmental and earth system science Linked data and semantics in environmental informatics Integrating ground and remote sensing data for environmental modelling Landscape surface process modelling and data assimilation Integrating modelling and sensor networks for environmental management Geospatial earth observation data cube National and trans-national environmental data facilities, services and standards Big data technologies in the environmental domain Environmental applications for crises and disaster management Benchmarking systems and methods for environmental models General papers on environmental software systems 										
<p>Paper submission and publication</p> <p>Submissions will be peer-reviewed by the international program committee in a two-stage process. Extended abstracts of 3-4 pages will be reviewed for acceptance and must be based on the template available at the conference site. They shall be in one of the categories: I. Research paper, II. Practice paper, III. Workshop, IV. Tutorial. These categories are treated equally, but we particularly welcome high quality papers demonstrating real world implementation results. Full papers (8-10 pages) are then peer reviewed for quality. Accepted papers will be published in IFIP AICT by Springer publishers, indexed by SCOPUS and ISI.</p>											
<p>Important links</p> <p>www.isess2015.org www.ifipwg511.org www.ifip.org</p>	<p>Deadlines for authors</p> <table border="1"> <tr> <td>5/9/14</td> <td>Extended abstract submission</td> </tr> <tr> <td>3/10/14</td> <td>Notification of abstract acceptance</td> </tr> <tr> <td>7/11/14</td> <td>Full paper submission</td> </tr> <tr> <td>28/11/14</td> <td>Notification of paper acceptance</td> </tr> <tr> <td>19/12/14</td> <td>Revised paper (camera-ready)</td> </tr> </table>	5/9/14	Extended abstract submission	3/10/14	Notification of abstract acceptance	7/11/14	Full paper submission	28/11/14	Notification of paper acceptance	19/12/14	Revised paper (camera-ready)
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ASOR Website

Although <http://www.asor.org.au/> may look a bit dated, click through to Melbourne or Queensland chapters and see up-to-date and colourful websites for ASOR's most active chapters. The ASOR Melbourne website contains a back-catalogue or newsletters, membership forms, registration forms (from time-to-time when we have events) and other goodies.

Support for Visiting Researchers

Have you got an interstate or international visitor? ASOR Melbourne has committed funds to assist with the costs of visits, in exchange for visitors giving a seminar for the members. Contact us to discuss the opportunities.

Web Pages of Interest

We are affiliated with FASTS through AMSC. To keep abreast of FASTS, see www.usyd.edu.au/fasts

ASOR National: www.asor.org.au

NZ OR Society <http://www.orsnz.org.nz/>

ORS (UK): <http://www.orsoc.org.uk/>

INFORMS (US): <http://www.informs.org/>

IFORS: <http://www.ifors.org>

Optimisation in Melbourne:
<http://www.or.ms.unimelb.edu.au/>

For the latest international news, conference and jobs details see: <http://www.ifors.org/panorama/index.html>

tutOR: <http://www.tutor.ms.unimelb.edu.au>

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Student Reps: Tony Cox (QUT) and Belinda Spratt (QUT)

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