asor news

ASOR News — June 2014

Contents

Farewell Natashia Boland and Martin Savelsbergh

Simon Dunstall

Our current ASOR National President, Natashia Boland, and INFORMS Fellow Martin Savelsbergh fly out of Australia during the week starting 23 June, to relocate in Georgia, USA.

On behalf of ASOR and the Australian OR community, best wishes Martin and Natashia in your new roles at Georgia Tech.

Newcastle News

Students: Alan Lee

Two PhD students, Simranjit Kaur and Reena Kapoor have given their completion seminars. Hadi Charkhgard is presenting a talk titled *The Triangle Splitting Method for Biobjective Mixed Integer Programming* at the 17th IPCO Conference (Integer Programming and Combinatorial Optimization), in Bonn. Simranjit Kaur and Reena Kapoor are also presenting posters at this conference.

ASOR Rising Star Award

The Australian Society for Operations Research (ASOR) has established a biannual **Rising Star Award** (RSA). The objectives of RSA are to:

- acknowledge and encourage promising early career researchers in Operations Research;

- help promote the advances to Operations Research due to early career researcher;

- improve the competitiveness of starting Operations Researchers in their career paths both in industry and academia.

Researchers may be eligible to be nominated if they have been awarded a PhD within five years or, if they have already submitted their PhD theses. Exceptions to the five year limit can be made to allow for significant interruptions to research development, for example, parental duties, illness or career change.

Nominations for the award can be made by any member of ASOR other than the nominee. Letters of nomination should not exceed two A4 pages and should be accompanied by the nominee's list of publications and a brief CV.   In addition, documented contributions to the practice of OR in industry (e.g., testimonials from end users as to the nominated candidate's specific contributions, evidence of impact, etc) may also be attached.

These nomination materials should be addressed to Prof. Jerzy A. Filar, Chair, RSA selection committee, School of Computer Science, Engineering and

Mathematics, Flinders University, Jerzy.Filar@flinders.edu.au. **Electronic submissions are preferred. The closing date is: September 30, 2014.**

The RSA winners will be invited to present their finding at the next ASOR national biannual meeting and will receive a certificate of recognition and a cheque for $1000.

IFORS 2014 in Barcelona

Simon Dunstall

The International Federation of OR Societies (IFORS) 2014 conference begins on 13 July in Barcelona, Spain. This will be the first IFORS since IFORS 2011 which ASOR hosted in Melbourne. I understand that several ASOR members are attending IFORS 2014, including Natashia Boland, Leorey Marquez, Ian Monks, John Hearne, James Minas and myself.

RMIT is running a bushfire modelling and analytics workshop in Barcelona on the day prior to the conference. This is being organised by John Hearne and James Minas.

NICTA 3rd International Optimisation Summer School

**Kioloa, New South Wales, Australia,
January 11th to 16th 2015**

Call for Participation

http://org.nicta.com.au/optschool

Spend a week by the beach learning about the latest optimisation technologies. How can you help a business reduces its costs? Or reduce their carbon footprint? Or do both?

The school will focus on solving large scale combinatorial optimisation problems in practice. It is intended for undergraduate students (3rd year or later), masters or early stage PhD students. Every undergraduate participant will be assigned an individual mentor.

Topics covered include: introduction to constraint programming, modelling, integer programming, column generation, uncertainty, vehicle routing, scheduling, supply networks and research skills.

Lecturers include Simon Dunstall, Phil Kilby, Pascal van Hentenryck, Peter Stuckey, Mark Wallace and Toby Walsh.

Registration: The registration page is open now (http://org.nicta.com.au/optschool) and applicants will be considered as they are received. Undergraduates attend for free. Yes, a week by the beach paid for with fun and games! Postgraduates need pay just $250 which covers 5 nights accommodation, all food and drink, and the coach transfer from Sydney. In addition, NICTA will be offering a $200 grant to two female undergraduates to assist with travel expenses.

Organizer: Prof. Toby Walsh, NICTA and UNSW.

Local information: The School will again be held at ANU's beautiful seaside campus at Kioloa, near Bawley Point on the south coast of New South Wales.

Changes in the ASOR Melbourne Committee

Alan Lee is departing Newcastle to continue his studies at ANU, and as a result we welcome Fabian Rigterink as a new ASOR Melbourne committee member, in the capacity and co-representative for Newcastle. Alan will remain on the ASOR Melbourne committee.

Upcoming OR Seminars

ASOR Melbourne Series

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. *See further details elsewhere in this newsletter*.

Maxima Seminars (Monash Uni)

See 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, *and see further details elsewhere in this newsletter*.

Maxima Seminars (at Monash)

Kate Smith-Miles

A series of seminars are being given by MAXIMA visitor Professor Hans De Sterck over the next few weeks.

Hans De Sterck is Professor in Computational Mathematics and Scientific Computing at the Department of Applied Mathematics of the University of Waterloo in Canada. He is a member of the Centre for Computational Mathematics in Industry and Commerce at the University of Waterloo, and is cross-affiliated to the Scientific Computation Group of the School of Computer Science. He served as Graduate Advisor for the new Master's program in Computational Mathematics (2007-2010), and as Waterloo Site Leader for SHARCNET (2007-2009). He is serving as Associate Editor of the SIAM Journal on Scientific Computing (since 2008), and as Secretary of the SIAM activity group on Computational Science and Engineering (SIAG CSE) (2013-2014). He will be co-chairing the 2015 SIAM conference on Computational Science and Engineering. The overall ambition of his research is to develop efficient mathematical techniques and scalable parallel methods for the solution of scientific and engineering problems on large-scale computer infrastructure. In particular, he works on multilevel numerical linear algebra methods, numerical methods for PDEs, and novel platforms for scientific computing including GPUs and clouds. His research finds applications in large-scale computing for information retrieval (including Markov chains, clustering, image processing, graph analysis), and in computational fluid dynamics and magnetohydrodynamics for astrophysics and geophysics.

Finite Volume Element Methods for Nonlinear Elliptic PDEs Describing Singular Capillary Surfaces Thursday, June 26, 3pm – 4pm, Bldg 28 (Maths), Room M442, Monash Clayton Campus.

Singular capillary surfaces in domains with sharp corners or cusps are well-studied and the asymptotic series approximation of the solution is known. Yet it is also known that the singularity of the solution spoils the accuracy of standard finite element approximations, which cannot reproduce the singularity accurately. First we describe finite volume element methods for computing singular solutions of linear elliptic PDEs with high-order accuracy. High-order accuracy is obtained by augmenting the trial function space with singular basis functions. In the case of the nonlinear elliptic PDE that describes capillary singularities, we find that an accurate numerical approximation can be obtained with the finite volume element method through an appropriate change of variable combined with a change of coordinates, motivated by the known asymptotic behaviour. Using this accurate numerical approximation methodology, we can numerically confirm the validity of the known asymptotic expansions in great detail, and we can make two conjectures on asymptotic behaviour of singular capillary surfaces at a cusp for two open cases. This is joint work with Yasunori Aoki.

Multilevel Aggregation of Graphs: from Biomedical Image Segmentation to Community Finding in Social Networks. Jointly with FIT Colloquium, Wednesday July 2nd, 2pm-3pm, Building 26 (Faculty of IT), Monash Clayton Campus.

Multilevel aggregation is a powerful scientific computing paradigm with a proven track record in a variety of problem areas, including fast solvers for linear equation systems, where it first rose to prominence. In this talk I will describe how multilevel aggregation heuristics can also be applied successfully to graph coarsening problems. I will first present a multilevel aggregation method for segmenting live cell bright field microscope images. The method employed is a variant of the so-called Segmentation by Weighted Aggregation technique, which itself is based on Algebraic Multigrid methods from numerical linear algebra. The method attempts to segment the image into salient groups of pixels by using a multilevel aggregation procedure that groups blocks of neighbouring pixels with similar intensity at various scales, based on multiscale feature vectors for the pixel blocks. Results are presented for applying the multilevel aggregation algorithm in space-time to temporal sequences of microscope images, with the goal of obtaining space-time segments (object tunnels) that track individual cells. Application to segmentation for satellite images is also briefly discussed. I will next describe how similar approaches can be used to find multilevel overlapping communities in social networks.

For more information, contact Professor Kate Smith-Miles, Director of MAXIMA, http://monash.edu/maxima

AMSI AGR National Seminars

The C*-algebras of right-angled Artin-Tits monoids

Speaker: Professor Søren Eilers

Date and Time: Monday 7 July 3.00pm AEST (2.30pm connection time)

Host Venue: University of Wollongong

Abstract and speaker bio:
http://www.amsi.org.au/index.php/research-mainmenu/access-grid/events-and-seminars/311-events/agr-events-10/1286-the-c-algebras-of-right-angled-artin-tits-monoids

Big data computing: Science and pseudoscience

Speakers: Professor David Bailey and Professor Jon Borwein

Date and Time: Friday 11 July, 3.00pm AEST (2.30pm connection time)

Host Venue: University of Newcastle

Abstract:
http://www.amsi.org.au/index.php/research-mainmenu/access-grid/events-and-seminars/311-events/agr-events-10/1287-amsi-agr-national-seminar-big-data-computing-science-and-pseudoscience

Fooling the masses: Reproducibility in high-performance computing

Speakers: Professor David Bailey and Professor Jon Borwein

Date and Time: Tuesday 15 July, 3.00pm AEST (2.30pm connection time)

Host Venue: University of Newcastle

Abstract:
http://www.amsi.org.au/index.php/research-mainmenu/access-grid/events-and-seminars/311-events/agr-events-10/1288-amsi-agr-national-seminar-fooling-the-masses-reproducibility-in-high-performance-computing

If you want to participate in any of these seminars:

1. Book your nearest Access Grid room and ensure technical support is available throughout the seminar. Please notify the technical support people that connection time is 2.30pm AEST, for a 3.00pm AEST start of the presentation; and

2. Contact **Maaike Wienk** at agr@amsi.org.au, *one week in advance at the latest*, with a cc to (*for U. Newcastle as the host*) **Andrew Danson** (Andrew.Danson@newcastle.edu.au) or (*for U.*

Wollongong as the host) **Neil Wood** (nwood@uow.edu.au)

ASOR Melbourne July Seminar — Dudley Foster

The next ASOR Melbourne Seminar will be held on 16 July at RMIT (Room 8.9.66) and other sites by Access Grid.

Reflections on a Lifetime of OR and its Application in Private Life, **Dudley Foster**, ASOR Honorary Life Member / Sessional Project Supervisor at University of Edinburgh.

In this talk, Dudley will reflect on a lifetime's OR experience, covering, in particular: issues of problem definition; the use of scenarios as an aid to decision making under uncertainty; network analysis (CPM / PERT) as a formal technique, but also using 'network thinking' to prioritize work both professionally and personally; Queuing Theory, and the widespread failure to use simple, long established knowledge; Kepner Tregoe methodology, especially Potential Problem Analysis; and basic principles of implementation and client relations, including their use in reducing the trauma associated with managing emotionally laden issues in private life. Each topic will be illustrated with one or two examples from Dudley's professional experience and also by more recent examples from his private life and/or the planning of professional activities. The talk will conclude with a brief outline of a voluntary sector project (design and construction of an anelammatic sundial – including the writing of user guide at a reading age of 10) carried out for Rotary Club of Leven in a multi-disciplinary team consisting of: a fund raising expert (the project was a condition attached to one source of funds); a mathematician (Dudley); a structural engineer (whose office did the technical drawings and who helped to physically validate the design); a retired banker (who came up with excellent cost-reducing ideas) and a retired primary school teacher (whose expert help was essential in correcting the reading age of the User Guide).

Dudley Foster, B.A (Hons), M Tech (OR) has 40 years of experience in Operations Research in the UK, Australia and New Zealand., During his last 10 years in Australia (1996 to 2006) he was a Director of DNF Decision Sciences Pty Ltd and latterly of NORCA Consulting. In addition to his 14 years as a

consultant, his experience includes 18 years in industry (6 years with the NCB in UK and later 12 years with Shell Australia) and 6 years as a tertiary lecturer, during his first 6 years in Australasia. A lot of his work was related to business improvement across the interface between Manufacturing and Marketing. He is also an expert on financial modelling, with a particular focus on the economic evaluation of investment proposals and has developed a number of generic financial models, as well as tailored models covering greenfield projects, acquisitions and divestments. His course Financial Modelling in Excel was delivered many times under the auspices of AIOR, both as a public offering and to in-house groups, and more recently, the course has been translated into Spanish, in collaboration with a Mexican associate, Ricardo Melgar Cruz. During his last 10 years in Australia, Dudley was a Senior Academic Associate with the Graduate School of Business at Victoria University and the Industrial Adviser to the Financial Modelling [Research] Program. Since retiring and returning to UK, he has worked as a sessional supervisor of projects undertaken by students on the MSc in OR at the University of Edinburgh, where he also attends seminars at the Edinburgh Research Group in Optimization (ERGO), the Edinburgh equivalent of ORSUM at the University Melbourne. A synopsis of the one seminar he delivered to ERGO can be found at http://www.maths.ed.ac.uk/ERGO.

Australian Conferences

The next **International Symposium on Environmental Software Systems** (ISESS) conference will be held in Melbourne, 25-27 March 2015. See www.isess2015.org.

ASOR email Lists

For ASOR Queensland members, you can subscribe and manage your subscription to the Queensland mailing list via the links on the ASOR website. For ASOR Melbourne members, 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.

ASOR Website

Starting from http://www.asor.org.au/, 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

ASOR Melbourne Committee 2014-2015

Chair — **Simon Dunstall,**
    0417 330 231, simon.dunstall@csiro.au

Vice Chair — **Patrick Tobin,**
    03 9953 3199, Patrick.Tobin@acu.edu.au

Secretary — **Kaye Marion,**
    03 9925 3162, kaye.marion@rmit.edu.au

Treasurer — **Paul Lochert,**
    03 9802 4628, plochert@bigpond.net.au

Student Representative — **Cameron MacRae,**
    cameron.macrae@rmit.edu.au

Committee:

   Moshe Sniedovich
   03 8344 5559,
   m.sniedovich@ms.unimelb.edu.au

   Henry Burley
   03 9458 1872, h.burley@latrobe.edu.au

   Red Ceglowski
   03 9903 4569,
   Andrzej.Ceglowski@buseco.monash.edu.au

   Gaurav Singh
   03 9545 8467, Gaurav.Singh@csiro.au

   David Marlow,
   david.marlow@dsto.defence.gov.au

   Melih Ozlen
   03 9925 3007, melih.ozlen@rmit.edu.au

   Mohsen Jafari Songhori,
   m.jafarisonghori@student.unimelb.edu.au

   Kristian Rotaru,
   03 9903 4567, kristian.rotaru@gmail.com

   Baikunth Nath (ex-officio)
   0433 926 091, baikunthn@gmail.com

   Amie Albrecht (SA Rep)
   Amie.Albrecht@unisa.edu.au

   Rachel Bunder (Joint Newcastle Rep)
   Rachel.Bunder@uon.edu.au

   Fabian Rigterink (Joint Newcastle Rep)
   (email TBA)

   Alan Lee (ACT Student Rep)
   (email TBA)

Newsletter Editor — **Simon Dunstall**

ASOR Brisbane Committee 2014-2015

President: Andy Wong (QUT)

Secretary: Kari Stuart (AECOM)

Treasurer: Brad 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)

ASOR National Committee 2014

President — **Natashia Boland,**
    Natashia.Boland@newcastle.edu.au

Vice President (Admin, Membership and Public Relations) — **Simon Dunstall**
    0417 330 231, simon.dunstall@csiro.au

Vice President (Education) — **Jerzy Filar**
    jerzy.filar@flinders.edu.au

Treasurer — **Kaye Marion,**
    03 9925 3162, kaye.marion@rmit.edu.au

Bulletin Editors — **Paul Gaertner and Paul Corry,**
    Paul.Gaertner@dsto.defence.gov.au,
    paul.corry@aurecongroup.com

Webmaster — **Andy Wong,**
    a3.wong@qut.edu.au

Public Officer — **Phil Kilby**,
    phil.kilby@nicta.com.au

APORS Representative — **Erhan Kozan,**
    e.kozan@qut.edu.au

IFORS Representative — **Patrick Tobin,**
    03 9953 3199, Patrick.Tobin@acu.edu.au

STA (“FAST”) Representative — **Natashia Boland**