Position Description

Department of Mathematics and Statistics
Faculty of Science
The University of Melbourne

RESEARCH FELLOW GRADE 1

Position No: Y0004152
Organisation Unit: Department of Mathematics and Statistics
Budget Division: Faculty of Science
Classification: Research Fellow Grade 1
Salary: $43,011 - $58,368 p.a.
$54,375 - $58,368 p.a. *Entry at PhD level
Superannuation: Employer superannuation contributions of 9 percent
Employment Type: This is a full-time (fixed-term) position available for 16 months.
Other Benefits: Salary packaging and staff training and development opportunities.
Current Occupant: Vacant

How To Apply:
- Applicants must complete an ‘Application Cover Sheet’ found at www.hr.unimelb.edu.au/jobs/appcoversheet.rtf
- Applications must address the selection criteria, quote the position number and include the contact details of three referees.
- Applications can be forwarded to one of:
  Email: hr-applications@unimelb.edu.au
  Fax: +61 3 8344 6080
  Mail: Vice-Principal (Human Resources), The University of Melbourne Victoria 3010

For enquiries contact:
Dr Sanming Zhou, tel. +61 3 8344 3453,
email smzhou@ms.unimelb.edu.au or Dr Vicky Mak,
telephone: +61 3 9251 7670, email vicky@deakin.edu.au

Closing Date: 15 November 2005
1 Position Summary

This postdoctoral position, in the Department of Mathematics and Statistics, The University of Melbourne, is to conduct research on an Australian Research Council Discovery Project with Dr Sanming Zhou and Dr Vicky Mak as Chief Investigators. The title of the project is “Channel Assignment in Cellular Communication Systems and Optical Networks”. It is administered by The University of Melbourne and led by Dr Sanming Zhou, and is planned to run for the three-year period 2005-2007.

To find out more about the Department and the Operations Research group, please refer to the website: http://www.ms.unimelb.edu.au

The successful applicant will undertake research on the problem of assigning channels to transmitters in a cellular communication system or to processors in an optical network such that, under various interference constraints, the span between the largest and the smallest channels used is minimized. Such problems can be formulated as optimal labelling problems for graphs. The project aims at a systematic study of some channel assignment problems with emphasis on upper and lower bounds, approximation and heuristic algorithms, exact values of the minimum span for specific graphs and solutions to some open problems by using techniques from Combinatorics, Graph Theory, and Integer Programming. The work will focus on theoretical aspects of various channel assignment problems.

The successful applicant will be expected to contribute to the research of the project and write scholarly papers for publication in high quality academic journals.

2 Selection Criteria

2.1 Essential

- The applicant must hold or have submitted a PhD in a related discipline (e.g. Operations Research, Combinatorial Optimisation, Graph Theory, etc.) by the date of appointment.

- Demonstrated ability to carry out high quality research in Combinatorial Optimisation, Graph Theory or/and Operations Research.

- The ability to make significant contribution to the project and work as part of a research team.

- Strong skills of writing mathematical papers in English, as well as good communication skills.
2.2 Desirable
- A PhD or/and research experience in an area which is closely related to the project.
- The ability to undertake independent research and to initiate new research ideas.
- Skills and experience in using Cplex, and C or C++.

3. Special Requirements
None

4. Key Responsibilities
The Research Fellow will be expected to participate in all theoretical and computational aspects of the research activities of the project. These may include theoretical analysis, production of new mathematical results, implementation and simulation, writing research outcomes into academic papers, etc.

In collaboration with the Chief Investigators, it is expected that the Research Fellow will write scholarly papers for publication in academic journals over the course of the project. It is also expected that the Research Fellow will attend one or more conferences, and present results of the research at appropriate forums.

Occupational Health and Safety (OHS) and Environmental Health and Safety (EHS) Responsibilities
All staff are responsible for the following safe work procedures and instructions:

Employees must:
- cooperate with the University in relation to activities taken by the University to comply with OHS and EHS legislation.
- comply with the OHS and EHS manuals
- adopt work practices that support OHS and EHS programs
- take reasonable care for their own health and safety and the health and safety of other people who may be affected by their conduct in the workplace
- seek guidance for all new or modified work procedures
- ensure that any hazardous conditions, near misses and injuries are reported immediately to the supervisor
- participate in meetings, training and other environment, health and safety activities
- not wilfully place at risk the health or safety of any person in the work place
- not wilfully or recklessly interfere with or misuse anything provided in the interest of environment health and safety or welfare
In addition, Academic Staff are responsible for ensuring that an equivalent standard of OHS and EHS is afforded to their students as is afforded to University staff generally. Academic staff are deemed to have principal supervisory duty for undergraduate and postgraduate student activities.

5 Other Information

5.1 Organisation Unit

The University of Melbourne’s Department of Mathematics and Statistics is one of Australia’s leading mathematics and statistics departments. It has achieved this status through the high quality of its research and teaching programs. The Department offers a wide range of subjects to undergraduate and postgraduate students and is involved in aspects of community life that impact on the interests of the Department and the discipline.

The Department of Mathematics and Statistics has a total of 46 teaching and research staff, 13 research fellows and statistical consultants, and 11 support staff. In 2005, there are 28 BSc Honours students and 50 post-graduate students and 8 masters students.

Within the Department, there are a number of major research groups. All these groups have substantial external research funding. Teaching at the honours and graduate levels reflects these areas of speciality, which are:

Algebra
Applied Statistics
Geometry and Topology
Continuum Modelling
Operations Research
Statistical Mechanics and Combinatorics
Stochastic Processes

Infrastructure support for research and basic information technology facilities are provided to all members of the department. Special facilities such as high end workstations and salaries for research fellows are supported through individual competitive external research grants. Members of the Department have had considerable success at attracting support from the Australian Research Council.

It is one of the objectives of the University to develop and maintain a strong international profile. In this context, members of the Department have strong collaborative links with colleagues in the United States of States of America, most countries in Europe and the Asia-Pacific region.

The www address of the Department of Mathematics and Statistics is http://www.ms.unimelb.edu.au.
5.2 Budget Division
Established in 1887, the Faculty of Science is one of the University's largest faculties and has approximately 7000 students across its courses. There are four schools and five departments, which include the Schools of Botany, Chemistry, Earth Sciences and Physics, and the Departments of Genetics, Information Systems, Mathematics & Statistics, Optometry & Vision Sciences and Zoology.

The Faculty is a partner in a number of externally funded research centres. These include the Mathematics and Statistics of Complex Systems Centre of Excellence, Quantum Computing Technology Centre of Excellence and the International Centre of Excellence for Education in Mathematics. Funding for Cooperative Research Centres (CRCs) include the CRC for Bioproducts, the CRC for Predictive Mineral Discovery, the CRC for Innovative Dairy Products and the Smart Internet CRC. Involvement in Special Research Centres (SRCs) include the SRC for Particulate Fluids Processing Centre and the SRC for Environmental Stress and Adaptation Research. Funding from the Grains Development Research Council (GRDC) is provided for the GRDC Research Centre for Functional Genomics, and from the ARC/GRDC for the ARC Centre for Functional Genomics. State Government funding via the STI (Science, Technology & Innovation) Initiatives Program supports the Victorian Institute for Chemical Science (VICS), the Victorian Centre for Plant Functional Genomics and the Australian Mathematical Sciences Institute (AMSI). The Statistical Consulting Centre, the Micro-Analytical Research Centre and The Melbourne Experimental Particle Physics group all function as centres within the Faculty.

The Faculty provides integrated programs of teaching, postgraduate training and community activity, all of which are based on a solid foundation of research in both the pure and applied sciences.

The Faculty's international agenda includes joint research ventures, exchange of staff and students, recruitment of overseas students and the inclusion of a global perspective in curricula.

5.3 The University of Melbourne
The University of Melbourne is an international research and teaching university. We employ people of outstanding calibre and offer a unique environment where staff are valued and rewarded.

Founded in 1853, the University commenced teaching its first students in 1855. The University has over 40,000 students in a broad range of professional disciplines. Over 6000 students are higher degree students. The University has over 6000 staff members.
The University is one of Australia’s leading research based universities, with an international profile through its reputation for scholarship and teaching. It is a founding member of Universitas 21, an international federation of universities.

The University is committed to equal opportunity in education, employment and welfare for staff and students. Students are selected on merit and staff are selected and promoted on merit.

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University. The Academic Board is responsible to Council for academic matters. Reporting to the Vice-Chancellor are the Deans of each Faculty, two Deputy Vice-Chancellors, and the Senior Vice-Principal. Reporting to the Senior Vice-Principal are Vice-Principal of Human Resources, Information, Property & Buildings, and University Development; the Vice-Principal & Chief Financial Officer; the Vice-Principal & General Counsel; and the Vice-Principal & Academic Registrar.

This position description is approved by:

Occupant: ................................................................................... Date: ...............

Supervisor: .................................................................................. Date: ............... 

Head of Organisation Unit: ......................................................... Date: ..............