History
Job Shop Scheduling is important in the manufacturing industry. Dispatching rules are understandable to human operators and cope well with dynamic problems; thus considered an attractive approach. However, manual design of such rules is difficult. Due to flexible representation and global search ability, Genetic Programming (GP) can automatically evolve dispatching rules. However, current techniques do not provide satisfactory results for difficult instances. This project aims to investigate novel GP program representations, optimisation and search mechanisms to evolve reusable and competitive dispatching rules for job shops in static and dynamic uncertain environments.

Purpose
One scholarship, supported by The Royal Society of New Zealand's Marsden Fund, is available for a PhD student to work on a topic concerning genetic programming for job shop scheduling and evolutionary feature selection under the supervision of Prof Mengjie Zhang, in the School of Engineering and Computer Science, Victoria University of Wellington, New Zealand.

The PhD project will focus on developing new genetic programming and other evolutionary computation algorithms for job shop scheduling in one or more areas such as attribute/feature selection and construction, multi-objective optimisation, and order acceptance and scheduling on both static and dynamic problems under uncertainty environments. The student will be co-supervised by our collaborator, Prof Kay Chen Tan at the National University of Singapore and will work together with other people at the Evolutionary Computation Research Group. The objective is efficient delivery and customer satisfaction.

For more information on our research, please visit http://ecs.victoria.ac.nz/Groups/ECRG/ and http://ecs.victoria.ac.nz/Main/MengjieZhang.

Eligibility
Applications are invited from suitably qualified candidates to undertake this PhD research project. The successful applicant would ideally have a first class Honours or Masters degree in computer science or operations research (with a GPA of 3.5/4.0 or above), including research experience and publications in evolutionary computation and scheduling. Experience in machine learning and strong programming skills in Java and C++ would be an advantage.

Number of awards offered
One scholarship is available.

Total value & Tenure
NZ$23,500-25,000 per annum for up to three years. The start date will be before 1 February 2014.

Closing date for applications
1 September 2013.

How do students apply?
1) Applicants must complete the Victoria University PhD Admission form available from: http://www.victoria.ac.nz/fgr/prospective-phds/applying.aspx
Applicants must provide all the documents requested on the admission form and also a CV.

2) Applicants should clearly indicate on the front of this form and in Section 3.2 that they are applying for the Genetic Programming for Job Shop Scheduling Scholarship.

3) All application materials must be forwarded to the address outlined on the admission form. If all requested application documentation is not received, the application may not be forwarded to the selection panels.

4) In the “Statement of Research Interests”, in addition to the areas formally requested on the application form, applicants should also indicate their interests in, and knowledge of, the project topic outlined above.

Who has information about the scholarship
Enquiries about the project should be directed to Prof Mengjie Zhang, mengjie.zhang@ecs.vuw.ac.nz

Enquiries about the application process should be directed to the Manager for PhD Admission and Scholarships, sue.odonnell@vuw.ac.nz