

Colorado State University presents



Prof. David Abramson

Computer Science Department
Monash University, Clayton
Victoria, Australia

**Abell Endowment Distinguished Lecture
in Computer Engineering**

**in conjunction with an
Electrical & Computer Engineering Dept. Special Seminar
and a Computer Science Dept. Special Seminar**

**“Robust Workflows for
Science and Engineering”**

Friday, June 8, 2012

Reception: 10:30 a.m.

Lecture: 11:00 a.m. to Noon

Lunch: Noon – provided by the CS Dept.

Computer Science Room 130

Abstract:

Scientific workflow tools allow users to specify complex computational experiments and provide a good framework for robust science and engineering. Workflows can consist of pipelines of tasks that explore the behaviour of some system, involving computations that are either performed locally or on remote computers. Robust scientific methods require the exploration of the parameter space of a system (some of which can be run in parallel on distributed resources), and may involve complete state space exploration, experimental design or numerical optimization techniques. Whilst workflow engines provide an overall framework, they have not been developed with these concepts in mind, and in general, don't provide the necessary components to implement robust workflows.

In this seminar I will discuss Nimrod/K - a set of add in components and a new run time machine for a general workflow engine, Kepler. Nimrod/K provides an execution architecture based on the tagged dataflow concepts developed in 1980's for highly parallel machines. This is embodied in a new Kepler 'Director' that orchestrates the execution on clusters, Grids and Clouds. Nimrod/K also provides a set of 'Actors' that facilitate the various modes of parameter exploration discussed above. I will demonstrate the power of Nimrod/K to solve real problems in science by a set of case studies.

Professor David Abramson Brief Biography:

Professor David Abramson (<http://www.csse.monash.edu.au/~david/>) has been involved in computer architecture and high performance computing research since 1979. Previous to joining Monash University in 1997, he has held appointments at Griffith University. At CSIRO he was the program leader of the Division of Information Technology High Performance Computing Program, and was also an adjunct Associate Professor at RMIT in Melbourne. He was also a program manager in the Co-operative Research Centre for Intelligent Decisions Systems and the Co-operative Research Centre for Enterprise Distributed Systems. From 2007 to 2011, Prof. Abramson was an ARC Professorial Fellow. Currently Abramson is a Professor of Computer Science, Director of the Monash e-Education Centre and Science Director of the Monash e-Research Centre. His current interests are in high performance computer systems design and software engineering tools for programming parallel, distributed supercomputers and stained glass windows. He is a Fellow of the Association for Computing Machinery (ACM) and the Academy of Science and Technological Engineering (ATSE), and a member of the IEEE.

Prof. Abramson has served on committees for many conferences and workshops, and has published over 200 papers and technical documents. He has given seminars and received awards around Australia and internationally and has received over \$8.8 million in research funding. He also has a keen interest in R&D commercialization and consults for Axceleon Inc., which produces an industry strength version of Nimrod, and Guardsoft, a company focused on commercialising the Guard relative debugger.

Prof. H. J. Siegel is coordinating Prof. Abramson's visit and may be contacted at HJ@ColoState.edu