

Seminar: Friday 25 October 2013: Monash Undergraduate Research Projects Abroad (MURPA) and Queensland Undergraduate Research Projects Abroad (QURPA).

The annual MURPA/QURPA program exposes final year undergraduate students to an international research experience within a leading research laboratory.

On Friday 25 October Prof Peter Fox will present his seminar "How Environmental Informatics is Preparing Us for the Big Data Era" live to audiences in Melbourne and Brisbane.

Melbourne Date: Friday 25 October Time: 10.00 - 11.00am Location - Monash University: Seminar Room G12A, Building 26, Clayton Campus Enquiries: Caitlin Slattery (Faculty of IT)

Brisbane Date: Friday 25 October Time: 9.00 - 10.00am Location - University of Queensland: Seminar Room 505A, Building 47 (Axon), St Lucia Campus Enquiries: Sharon Cook (Research Computing Centre)

Abstract: How Environmental Informatics is Preparing Us for the Big Data Era

Prof Peter Fox

With increasing attention to how environmental researchers present and explain results based on interpretation of increasingly diverse and heterogeneous data and information sources and a renewed emphasis on good data practices, informatics practitioners have responded to this challenge with maturing informatics-based approaches. These approaches include, but are not limited to, use case development; information modeling and architectures; elaborating vocabularies; mediating interfaces to data and related services on the Web; and traceable provenance. The Big Data era broadly defined, presents numerous challenges to both individuals and research teams. In environmental science especially, sub-fields that were data-poor are becoming data-rich (volume, type and mode), while some that were largely model/ simulation driven are now dramatically shifting to data-driven or least to data-model assimilation approaches. These paradigm shifts make it very hard for researchers used to one mode of doing science to shift to another, let alone produce products of their work that are usable or understandable by non-specialists. At the same time, it is at these frontiers where much of the exciting environmental science needs to be performed and appreciated. In this contribution key informatics approaches, i.e. methods rather than specific technologies, that have been successfully applied to several environmental applications will be presented and discussed. Conclusions and future directions will also be outlined and discussed.

Seminar: Friday 18 October 2013: Monash Undergraduate Research Projects Abroad (MURPA) and Queensland Undergraduate Research Projects Abroad (QURPA).

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On Friday 18 October Dr Ilkay Altintas will present her seminar "On Workflow-Driven Science Using Scientific Workflows and Provenance" live to audiences in Melbourne and Brisbane.

Melbourne Date: Friday 18 October Time: 10.00 - 11.00am Location - Monash University: Seminar Room G12A, Building 26, Clayton Campus Enquiries: Caitlin Slattery (Faculty of IT)

Brisbane Date: Friday 18 October Time: 9.00 - 10.00am Location - University of Queensland: Seminar Room 505A, Building 47 (Axon), St Lucia Campus Enquiries: Sharon Cook (Research Computing Centre)

San Diego Date: Thursday 17 October Time: 4.00pm - 5.00pm Location: 5004 Meeting Room Enquiries: Teri Simas

Abstract: On Workflow-Driven Science Using Scientific Workflows and Provenance

Dr Ilkay Altintas

A scientific workflow is the process of combining data and processes into a configurable, structured set of steps that implement semi-automated computational solutions of a scientific problem. Scientific workflow systems promote scientific discovery by supporting the

scientific workflow design and execution. Kepler (<http://kepler-project.org>) is an open-source, cross-project collaboration to develop a scientific workflow system for multiple disciplines, providing a workflow environment for scientists. Kepler Scientific Workflow Environment supports the design, execution, and management of scientific and engineering workflows through dedicated capabilities including provenance management, run management and reporting tools, integration of distributed computation and data management technologies, ability to ingest local and remote scripts, and sensor management and data streaming interfaces. With its built-in instrumentation to capture provenance (execution history) of workflows and related data, Kepler workflows make it easier to track information about how products were derived, and enable understanding, reproduction, and verification of scientific results. This presentation will overview various scientific applications developed in Kepler and explain how different community cyberinfrastructure projects use Kepler scientific workflows and provenance as a part of their architecture. In addition, the presentation will cover how scientific workflows can be applied to big data applications with applications in bioinformatics.