

Bridging the HPC Tallent Gap with Computational Science Research Methods

Session 1

Time and Date: 11:00 - 12:40 on 11th June 2014

Room: Bluewater I

⌋ In Need of Partnerships – An Essay about the Collaboration between Computational Sciences and IT Services *Anton Frank, Ferdinand Jamitzky, Helmut Satzger, Dieter Kranzlmüller*

Abstract: Computational Sciences (CS) are challenging in many aspects, not only from the scientific domain they address, but especially also from its needs of the most sophisticated IT infrastructures to perform their research. Often, the latest and most powerful supercomputers, high-performance networks and high-capacity data storages are utilized for CS, while being offered, developed and operated by experts outside CS. This standard service approach has certainly been useful for many domains, but more and more often it represents a limitation to the needs of CS and the restrictions of the IT services. The partnership initiative π CS established at the Leibniz Supercomputing Centre (LRZ) moves the collaboration between Computational Scientists and IT service providers to a new level, moving from a service-centered approach to an integrated partnership. The interface between them is a gateway to an improved collaboration between equal partners, such that future IT services address the requirements of CS in a better, optimized, and more efficient way. In addition, it sheds some light on future professional development.

⌋ Development of Multiplatform Adaptive Rendering Tools to Visualize Scientific Experiments *Konstantin Ryabinin, Svetlana Chuprina*

Abstract: In this paper, we propose methods and tools for multiplatform adaptive visualization system development adequate to the specific visualization goals of the experiments in the different fields of science. Approach proposed was implemented and we present a client-server rendering system SciVi (Scientific Visualizer) which provides multiplatform portability and automated integration with different solvers based on ontology engineering methods. SciVi is developed in Perm State University to help scientists and researchers acquire the multidisciplinary skills and to solve real scientific problems.

⌋ Education 2.0: Student Generated Learning Materials through Collaborative Work *Raul Ramirez-Velarde, Raul Perez-Cazares, Nia Alexandrov, Jose Jesus Garcia-Rueda*

Abstract: In order to comply with the Integrated Learning Processes model a course on operating systems was redesigned in such a way that students would generate most of their learning materials as well a significant part of their evaluation exams. This new approach resulted in a statistical significant improvement of student's grade as measured by a standardized exam compared with a previous student intake

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⌋ Challenges of Big Data and the Skills Gap *Yong Shi and Yingjie Tian*

Abstract: At present, Big Data becomes reality that no one can ignore. Big Data is our environment whenever we need to make a decision. Big Data is a buzz word that makes everyone understand how important it is. Big Data shows a big opportunity for academia, industry and government. Big Data then is a big challenge for all parties. This talk will discuss some fundamental issues of Big Data problems, such as data heterogeneity vs. decision heterogeneity, data stream research and data-driven decision management. Furthermore, this talk will provide a number of real-life Big Data Applications and will outline the challenges in bridging the skills gap in while focusing on Big Data.

Session 2

Time and Date: 14:10 - 15:50 on 11th June 2014

Room: Bluewater I

⌋ The HPC Talent Gap: an Australian Perspective *Valerie Maxville*

Abstract: The recent Super Science initiative by the Australian government has provided funding for two petascale supercomputers to support research nationally, along with cloud, storage and network infrastructure. While some research areas are well-established in the use of HPC, much of the potential user base is still working with desktop computing. To be able to make use of the new infrastructure, these users will need training, support and associated funding. It is important to not only increase uptake in computational science, but also to nurture the workforce based on identified roles and ongoing support for careers and career pathways. This paper will present a survey of a range of efforts made in Australia to increase uptake and skills in HPC, and reflect on successes and the challenges ahead.

⌋ Measuring Business Value of Learning Technology Implementation in Higher Education Setting *Nia Alexandrov*

Abstract: This paper introduces the concept of Business Value of Learning Technology and presents an approach how to measure the Business Value of Learning Technology in Higher Education setting based on a case study in Computational Science and cognate areas. Computational Science subject area is used as a pilot for the studies described in this paper since it is a multidisciplinary area, attracting students from diverse backgrounds and Computational Science is both the natural environment to promote collaborative teaching methods and collaborative provision of courses and as such requires more streamlined management processes. The paper, based on the above case study, presents the motivators and hygiene factors for Learning Technology Implementation in Higher Education setting. Finally, the Intersecting Influences Model presents the influences of pedagogy, technology and management over the motivation and hygiene factors, together with the corresponding generalization for PG level HE setting.