

Robert Higgins

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VITALS Male - Irish - 20.06.1981

RESEARCH INTERESTS Heterogeneous computing, performance modelling, high performance computing, parallel computing, grid computing, scientific applications.

EDUCATION **University College Dublin**, Dublin, Ireland

Ph.D. Candidate, Computer Science, 2004 to (submission date: August 2010)

- Advisor: Dr. Alexey Lastovetsky
- Thesis Title: “*Modelling the Performance of Processors in Heterogeneous Computing Environments*”.

Study of the functional performance model of a processor, which describes speed of execution in terms of problem size. Extension of this model to non-dedicated computing environments. Application of the model to task-scheduling and data-partitioning problems. Optimizing the experimental construction of such a model and engineering a software tool to provide this optimised method. Employing techniques from Evolutionary Programming to Computational Geometry to realise and test new ideas.

B.Sc. (Hons), Computer Science, 1999 to 2004

- Final Project: “*N-Body Simulation for Heterogeneous Network of Computers*”.

Extension of a 2D N-Body simulation implemented in the mpC language, to 3D. 3D domain decomposition for heterogeneous parallelization. Implementation of OpenGL visualisation of simulation and decomposition.

SCHOLARSHIPS Irish Research Council for Science, Engineering and Technology
• EMBARK IRCSET/IBM Joint Postgraduate Scholarship, 2004-2008

ACADEMIC EXPERIENCE **University College Dublin**, Dublin, Ireland

Teaching Assistant **2004 to 2008**

3rd Year Undergraduate - Software Engineering Project

- Guided student driven group projects through weekly and on-demand meetings, and online via Moodle
- Evaluated groups and individuals

1st Year Undergraduate - Software Engineering Project

- Managed groups collaborating with their entire year on a large scale project
- Mentored students in tools required for collaborative development
- Graded weekly assignments

3rd Year Undergraduate - Object Oriented Programming

- Provided lab assistance to students studying OOP through C++

Higher Diploma - Algorithms

- Provided lab assistance to studying algorithms through Lisp
- Graded weekly assignments

PUBLICATIONS

R. Higgins and A. Lastovetsky, "Managing the construction and use of functional performance models in a grid environment," in *The 23rd IEEE International Parallel and Distributed Processing Symposium*, (Rome, Italy), May 25-29 2009.

A. Lastovetsky, R. Reddy, and R. Higgins, "Building the functional performance model of a processor," in *Proceedings of the 21st Annual ACM Symposium on Applied Computing (SAC 2006)*, (Dijon, France), April 23-27 2006.

A. Lastovetsky, R. Reddy, and R. Higgins, "An efficient procedure for building the functional performance model of a processor," *Cluster*, 2005.

R. Higgins and A. Lastovetsky, "Scheduling for heterogeneous networks of computers with persistent fluctuation of load," in *Parallel Computing: Current & Future Issues of High-End Computing, Proceedings of the International Conference ParCo 2005*, vol. 33 of *NIC Series*, (Malaga, Spain), pp. 171-178, 13-16 Sept 2005.

PROFESSIONAL EXPERIENCE

Sun Microsystems, Dublin

Software Development Intern

July 2002 to August 2003

- Part of the Volume System Products development team responsible for Service Controller firmware for the B1600 blade platform.
- Participated in design and implementation of automated testing for firmware Command Line Interface.
- Implemented Switch-to-Switch communication protocol simulator and testing tool.
- Administered development platforms, firmwares update and recovery, network installs.

Silesian University of Technology, Institute of Computer Science, Katowice, Poland.

IAESTE Internship

June 2004 to August 2004

- Installation and configuration of Condor system
- Implementation of functions in BigInt math library

TECHNICAL SKILLS Experience in a wide variety of programming environments and libraries, general networking and system administration.

Programming: C, Perl, Autotools, C++, Java, Lisp, shell scripting, unix programming, socket programming, pthreads, MPI, GridRPC, gdb, valgrind, gprof,

Applications: Octave, Gnuplot, L^AT_EX, Eclipse, Subversion, Git, MS Office, OOffice

Operating Systems: Linux, FreeBSD, OS X, Microsoft Windows, Solaris, VxWorks

Networking: Experience configuring servers of: DHCP, tftp, NIS, DNS, NFS, Apache, MySQL, POP/IMAP/SMTP. Experience configuring and using HPC Middlewares: Torque/Maui, Condor, GridSolve.

OTHER INTERESTS Cycling: committee member of UCD Cycling Club 2007 - 2009, member of Mountain Biking Association of Dublin. Photography: sports and portraits.