Curriculum Vitae: Deaglan Halligan

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Education

M.S., Computer Science, Purdue University — 2014
B.S., Electrical Engineering and Computer Science, UC Berkeley — 2008
B.A., Mathematics, UC Berkeley — 2008

Work

Teacher and Tutor • Pleasanton Unified School District, Pleasanton, CA — 2015–
Conducted classes and tutoring in mathematics for middle and high school students

Computer Science Teaching Assistant • Purdue University, West Lafayette, IN — 2014
Developed Perl software for evaluating student projects and conducted lab sections

Contract Research Assistant • Sandia National Laboratories, West Lafayette, IN — 2011–2014
Developed generic, objected-oriented C++ algorithms for fast distributed linear algebra

Mathematics Teaching Assistant • Purdue University, West Lafayette, IN — 2009–2010
Conducted discussion sections and graded student work

Research Intern • Microsoft Research, Redmond, WA — 2009
Developed C/C++ code for linear algebra and numerical exceptions targeting multicore

Junior Development Engineer • UC Berkeley, Berkeley, CA — 2009
Research Assistant and Developer • UC Berkeley, Berkeley, CA — 2007–2009
Implemented Fortran/C algorithms for mixed precision iterative linear solvers in LAPACK

Mathematics and English Tutor • Self-employed, San Francisco, CA — 2005–2009

Mathematics Tutor • UC Berkeley Academic Services, Berkeley, CA — 2007–2008

Undergraduate Intern • Lawrence Livermore National Laboratory, Livermore, CA — 2007
Developed Perl and GNU/Linux tools for efficient graphical data analysis

Software

Tramonto: Generic C++ iterative solvers and preconditioners for fluid density functional theory
Trilinos: Generic object-oriented C++ software for large-scale linear algebra, multiphysics, engineering
Numerical PDE: Parallel Scheme FEM code for numerical PDE with C/MPI interface
LAPACK 3.2: Fortran algorithms for extra precise iterative refinement and C testing framework
XBLAS 1.0: C BLAS routines for extra precise iterative refinement algorithms
LLNL ARES Project: Perl graphical analysis software for physics simulation code

Tools

Languages: C, C++, Scheme, Java, Perl, Python, MATLAB, Octave, Fortran
Libraries: Trilinos, LAPACK, Sca/LAPACK, MPI, Eigen, Intel MKL, OpenMP, Pthreads
Development: Debian and Fedora GNU/Linux on x86 and x86-64, GNU/Linux development tools
Documentation: LaTeX, Doxygen, Microsoft Office

Honors

Melvin L. Keedy Graduate Scholarship — 2009
California Governor's Scholar — 2004

Research

- with Amalie Frischknecht and Michael Parks. Electrical Double Layers and Differential Capacitance in Molten Salts from Density Functional Theory. Journal of Chemical Physics, July 2014 (paper).

- A Semiring Formulation of Boruvka's Algorithm. Purdue Graduate Network and Matrix Computations, December 2011 (presentation).

- Iterative Refinement for Tiled Factorizations with Exception Handling. Microsoft Research and Microsoft Technical Computing, August 2009 (presentation, report).

- with Douglas Mason and Marghoob Mohiyuddin. Nested Dissection Survey. UC Berkeley Graduate Numerical Linear Algebra, December 2008 (presentation).

- Efficient High-Level Scientific Testing in the Perl Language. Lawrence Livermore National Laboratory Student Poster Symposium, August 2007 (abstract, poster).