

Andy R. Terrel, Ph.D.

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EDUCATION

The University of Chicago, Chicago, IL

Ph.D. in Computer Science, August 2010, concentration: Computational Mathematics

M.S. in Computer Science, June 2007, concentration: Computational Mathematics

Texas Tech University, Lubbock, TX

B.S. in Physics and Mathematics, with honors, cum laude, 2004

B.A. in Philosophy, with honors, cum laude, 2004

EXPERIENCE

Postdoctoral Fellow, Texas Advanced Computing Center, The University of Texas, Austin, Texas.
April 2010 – present.

- Researched automated techniques for deriving numerical algorithms.

System Administrator, Computer Science Department, University of Chicago, Chicago, IL, 2007–2009.

- Provided general maintenance on 200+ servers (Debian Linux/GNU, OpenBSD, and Solaris),
- Migrated various services such as Apache webserver, MySQL databases, and Amanda backup system from legacy hardware, and
- Supported custom systems scripts in Python, Perl, and Bash.

Teaching Assistant, Computer Science Department, University of Chicago, Chicago, IL.

- Taught non-majors introduction to Java and SQL, Spring 2009, and
- Taught honors introductory computer science lab (using Scheme), Autumn 2006 and Autumn 2007.

Technical Consultant, Kove Corporation, Chicago, IL, Feb 2007–Jul 2008.

- First stage start-up company developing a network storage appliance,
- Engineered distributed testing infrastructure for multiple platforms (~17K lines of Python),
- Worked on user interface and system management team (~30K lines of C/C++ and Python),
- Provided technical support and liaison for site installations, and
- Recruited, interviewed, and mentored software developers.

PUBLIC SOFTWARE

Ignition Author: (<http://andy.terrel.us/ignition>) a collection of numerical code generators.

- Domain specific languages for integration, linear algebra, and finite element assembly with code generated to Python, C/C++, OpenCL, CUDA, and L^AT_EX.

FEniCS contributor: (www.fenicsproject.org) a collection of software packages that uses finite element methods to automate computational mathematical modeling written in C++ and Python.

- Principle author of Rheagen (<https://launchpad.net/rheagen>), a non-Newtonian fluid model simulation engine, and
- Manager of the FEniCS-Apps repositories.

SymPy contributor: (<http://www.sympy.org>) a computer algebra system written in Python.

PROGRAMMING EXPERTISE

I have a wide array of programming skills, see chart below, coming from both professional and hobbyist experience. My top professional skills include:

- Scientific simulation techniques,
- Concurrent and distributed computing, and
- Generative programming techniques.

Area	Tools/Skill
Languages	Python, C/C++, Java, Scheme, Perl, Haskell
Parallel	MPI, OpenMP, CUDA, OpenCL
Scientific Programming	FEniCS, PETSc, Matlab, Mathematica, Numpy/Scipy, SymPy
Web	LAMP, SQL, HTML, CSS, Javascript, Django, ExtJS, Tomcat
Source Control	GIT, Mercurial, SVN, CVS
Documents	L ^A T _E X, Sphinx, MS Office

RESEARCH EXPERIENCE

Published eight publications in scientific computing journals and books.

Lectured seventeen contributed and invited presentations.

Writing team for two successful NSF grants.

AWARDS

Givens Fellow. Mathematics and Computer Science Division, Argonne National Lab. 2009.

TU Delft Visitor Grant (Junior Fellow). Civil Engineering Department, TU Delft, Delft, The Netherlands. 2008.

Phi Kappa Phi National Graduate Fellowship, 2004.

COMMUNITY SERVICE

Organizer of FEniCS 2011 Conference.

Participant of Austin GiveCamp 2011.

Mentor for Google Summer of Code, Summer 2009 and 2010.

Reviewer for

- Journal of Computational and Applied Mathematics, PUb
- International Journal of Computer Applications in Technology,
- Automated Scientific Computing, a contributed collection from Springer-Verlag, and
- Java textbook published by Pearson Addison Wesley.

Session aide, AAAS Annual meeting, Chicago, IL, January 2009.

Session chair, SIAM Conference on Parallel Processing for Scientific Computing, Atlanta, GA, February 2008.