Timothy J. Schumacher, Ph.D.

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Work Experience

- **Google** — Mountain View, CA
  Software Engineer — *October 2013-Present*
  - Worked on production systems for gmail.
  - Worked on SMTP servers for delivery.
  - Design and implement features for spam detection.
- **Qualstar Corporation** — Boulder, CO
  Software Engineer — *May 2006-September 2013*
  - Built and maintained a J2EE web application with Apache Struts and deployed it on Apache Tomcat.
  - Implemented and documented a REST API for use with Ajax client side applications.
  - Wrote several C/C++ shared libraries and JNI interfaces to access them from Java applications.
  - Designed a C++ application with an embedded JVM to access Java functionality from a C++ program.
  - Investigated various technologies including Scala, Node.js, Jersey, Jenkins and Groovy.
  - Implemented the Automation/Drive Interface (ADI) between IBM drives and tape libraries.
  - Implemented a SCSI protocol endpoint in a tape library.
  - Maintained a build system, wrote several shell scripts to automate deployment of software packages.
- **University of Colorado at Denver** — Denver, CO
  Adjunct Faculty — *Fall 2011*
  - Taught Introduction to Statistics. (1 Section)
- **Colorado Mountain College** — Dillon, CO
  Adjunct Faculty — *2009 - 2011*
  - Survey of Calculus Instructor. (3 Sections)
- **University of Colorado** — Boulder, CO
  Graduate Instructor — *August 2001 - May 2008*
  - Taught several courses, including Calculus I,II and III.
  - Maintained course websites and wrote java applets to illustrate mathematical concepts to students.
  - Held regular office hours, staffed a walk in help lab, and wrote/proctored/graded exams.
- **University of Colorado** — Boulder, CO
  Research Assistant — *Summer 2000*
  - Developed code in C++ to solve partial differential equations using the Finite Element Method.
  - Wrote visualization tools using OpenGL.
  - Implemented a Linear Algebra library in C++ to solve various linear systems.
  - Set up a cluster with linux, used MPI to implement parallel processing code.

Education

- **University of Colorado** — Boulder, CO
  Ph.D., Mathematics — *2003-2008*
  - Emphasis on analysis, non-linear PDE's, and stochastic processes.
  - Thesis topic was removable singularities for the equation $\Delta u = u^{\alpha}$.
- **University of Colorado** — Boulder, CO
  M.A., Mathematics — *2001-2003*
  - Focus was on Analysis and function spaces, particularly Sobolev Spaces.

- **University of Colorado** Boulder, CO
  B.A., Mathematics *1998-2001*
  - Graduated with honors with a 3.89 cumulative GPA. Member of ΦBK Academic Honor Society.

Skills

Computer Languages: Java, Servlets/Struts, JSP, Javascript, Scala, Node.js, C/C++, LaTeX, Expect, Bash.

Operating Systems: Linux/UNIX, Posix, Windows 95/98/NT/2000/XP.

Applications: Mathematica, MS Visual Source Safe, git, vi/vim, Visual Slick Edit, Netbeans, Eclipse.

Interests: Skiing, rock climbing, hiking, mountain biking, playing banjo.

Talks/Workshops

- **The Trace Problem and Fractional Order Differentiation** Fall 2007
  Boulder, CO
  - Discuss what happens when one takes elements of Sobolev Spaces and restricts them to lower dimensional subsets.
- **HTML Workshop** Fall 2006
  Boulder, CO
  - Workshop for first year graduate students on how to create course web pages on the department server. Brief introduction to working in a Unix environment.
- **C++/Java Workshop** Fall 2006
  Boulder, CO
  - Gave an introduction to using the C/C++/Java tools available to graduate students in the Department of Mathematics.
- **Distributions and the Direct Delta Function** Fall 2004
  Boulder, CO
  - It is often stated that "the direct delta function isn't a function"... So what exactly is it? This talk gave an overview of distribution theory and weak derivatives.
- **Sobolev Spaces, Orlicz Spaces and Embedding Theorems** Spring 2003
  Boulder, CO *(M.A. Presentation)*
  - Examine the so-called critical case $mp = n$ for target spaces to embed the sobolev space $W_{m,p}(\mathbb{R}^n)$. Show how one can not embed into L^∞, but a suitable alternative can be found in the Orlicz Spaces.
- **Approximation in Hilbert Spaces, II** Fall 2002
  Boulder, CO
  - Part two of a two part talk about using least squares techniques in Hilbert Spaces. Show how one can obtain uniform estimates for approximations of functions using Sobolev norms in the $W^{k,2}$ spaces.
- **Approximation in Hilbert Spaces, I** Fall 2002
  Boulder, CO
  - Part one of a two part talk about using least squares techniques in Hilbert Spaces. Introduce least squares, derive the error minimizing property of least squares approximations.
- **The Brower Fixed Point Theorem** Summer 2000
  Buffalo, NY
  - Presented an elementary proof of the Brower Fixed Point Theorem.