

# Christopher E. Mueller

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## Overview

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I am a post-doctoral researcher at Indiana University, researching high-productivity programming paradigms with a focus on high-performance algorithms for chem/bioinformatics and large data visualization. In addition to my academic work, I have 10+ years experience as a software engineer, architect, technical lead, and consultant developing bioinformatics and scientific software and large-scale Web applications.

## Experience

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### **Pervasive Technology Labs, Indiana University, Post-Doctoral Researcher, June 2007 – Present**

- Extending Synthetic Programming to support library defined parallel programming models
- Many-core Supercomputer Performance Characterization

### **Open Systems Lab, Indiana University, Research Associate, August 2003 – Present**

- Invented Synthetic Programming, a technique for run-time code synthesis from Python
- Mapped chem/bioinformatics algorithms to modern SIMD processors (Cell/B.E.)
- Researched large graph visualization and clustering algorithms.
- Cellular Potts Model-based Tissue Simulation software development (with the Biocomplexity Institute).
- Consulted with academic and corporate clients to implement agile development processes for creating software in scientific environments

### **Array Biopharma, Inc., Boulder, CO, Senior Software Engineer, October 2001 – September 2003**

- Designed and implemented databases, algorithms and applications for combinatorial chemistry.
- Implemented a novel visualization system for the Analytical Chemistry group that improved their throughput.

### **Critical Path, Inc., Boulder, CO, Architect and Team Lead, November 1999 – May 2001**

- Responsible for design and implementation of InVoke Wireless Server 1.0/2.0, a localized and brandable set of applications that provide wireless access to Critical Path's mail, directory and personal address book services.
- Coordinated efforts with 3rd party developers for component development, led the geographically distributed development team, and worked with external focus groups to define requirements.

### **Research Systems, Inc., Boulder, CO, Technical Lead, June 1997 – November 1999**

- Created ION Script, a server-side scripting language for creating Web-based applications that interact with IDL (Interactive Data Language) servers for scientific visualization and analysis.
- Architected client and server improvements to the ION Java Product, including the addition of compression techniques, the HTTP tunneling proxy server, and advanced network-enabled graphics objects.

### **Mapquest.com, Denver, CO, Software Engineer, August 1996 – June 1997**

- Part of the team that implemented the second version of the MapQuest Web site

### **HP Labs, Palo Alto, CA, SEED Internship, June 1996 – August 1996**

- Researched component-based image processing pipelines.

### **LSC/Rock Physics Lab, University of Notre Dame, Undergraduate Research, January 1995 – May 1996**

- Developed data acquisition, instrument control, analysis and visualization tools

## Skills

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**Languages:** Python, C, C++, Java, SQL, HTML, Scheme, UML, XML, PPC/SPU assembly, Fortran

**Platforms:** OS X, Windows NT/XP, Unix, Linux, Cell BE

**Domains:** Scientific computing, Chem/Bioinformatics, Information Visualization, Web Applications

## Education

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Indiana University, Bloomington, Ph.D. in Computer Science with minor in Bioinformatics,  
Dr. Andrew Lumsdaine, advisor, Dr. Mehmet Dalkilic, minor advisor, 2003 – 2007

Indiana University, Bloomington, M.S. in Computer Science, 2005

University of Notre Dame, B.S. in Computer Science, 1996