

William C. Benton

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Education

- 2008 **PhD (computer sciences, expected summer 2008)**, *University of Wisconsin–Madison*.
Dissertation title: “Object-Level Parallelism for Multicore Processors,” advised by Charles Fischer.
Minor coursework in analytic philosophy and musical applications of digital signal processing.
- 2003 **MS (computer sciences)**, *University of Wisconsin–Madison*.
- 2000 **BA cum laude (philosophy, music, computer science)**, *St. Olaf College*.

Skills

Excellent oral and written communication skills. Experienced teacher and presenter.

- Languages** Professional expertise with C, C++, Java, JVM bytecode, OCaml, PHP, Prolog, Python, Scheme, SQL, and shell scripting. Familiarity with Common Lisp, Objective C, Perl, R, Ruby, and most contemporary microprocessor instruction sets.
- Techniques** UNIX systems programming, Linux kernel modules, multithreading (Java, Solaris, and POSIX threads), binary instrumentation, static analysis and compiler development, virtual machine and interpreter implementation, web services with XML-RPC.

Experience

- Summer 2003 – present **Research Assistant**, *Computer Sciences Department, University of Wisconsin*.
Supervised by Prof. Charles Fischer. Have investigated a range of topics, including performance analysis of high-level language features, novel program analyses and transformations for Java, design and implementation of a logic programming environment for program analysis, and runtime support for opportunistic parallelism in a Java virtual machine.
- Summer 2005 – Fall 2007 **Teaching Assistant/Lecturer**, *Computer Sciences Department, University of Wisconsin*.
Lectured and developed course materials, including slides, handouts, and programming projects, for introductory and senior-level courses. *Awarded departmental and university teaching honors*.
Taught an introductory course covering the Java language and object-oriented design in five regular semesters and twice (2006, 2007) as a summer lecturer. Supervised graduate teaching assistants in the summer terms. Introduced process for automated grading with JUnit.
Taught a senior-level survey course on operating systems, covering topics including C and UNIX, concurrency, process scheduling, virtual memory and memory management, I/O, file systems, and security, as a summer lecturer in 2005.
- October 2005 – April 2006 **Independent Consultant**, *hired by Thumtronics Ltd, Bussleton, Western Australia*.
Assisted in refining a proprietary, novel audio synthesis algorithm from a high-level description. Developed a prototype implementation and provided detailed implementation documentation, which specifically treated the performance issues – both algorithmic and architectural – related to implementing such a synthesizer efficiently.

- Fall 2000 – **Research Assistant**, *Computer Sciences Department, University of Wisconsin.*
Spring 2003 Supervised by Prof. Barton Miller. Assisted with maintenance, development, and documentation of the Paradyn parallel performance analysis tool and the Dyninst dynamic instrumentation library, using C and C++. Ported the Paradyn front-end to use pthreads. Maintained the Dyninst library on the SGI IRIX platform; discovered and reported a subtle bug in the IRIX kernel. Diagnosed and fixed performance problems in the Paradyn tool front-end.
- Summer 2000 **Consultant**, *Devon Consulting, Wayne, PA.*
Implemented document management system that used Java, JDBC, Oracle, and DCOM to parse semi-structured reports written in Microsoft Word and publish a dynamic web site.
- Summer 1999 **Summer Student Intern**, *SmithKline Beecham, Inc., King of Prussia, PA.*
Developed a highly-concurrent web spider to aid in maintaining a database of internet resources and articles. Developed a Java framework based on Cardelli and Davies' *service combinators* abstraction, to aid other developers in writing concurrent and network programs.

Awards and Honors

- 2007 **ACM SIGPLAN PAC Travel Grant.**
Awarded a grant to present at PPDP 2007 in Wrocław, Poland.
- 2007 **Teaching Fellow**, *College of Letters and Science, University of Wisconsin.*
Selected from nearly 1,300 candidates as one of fifteen graduate teaching assistants who “have achieved outstanding success as students and teachers.”
- 2006 **Outstanding Graduate Student Instructor Award**, *Computer Sciences Department, University of Wisconsin.*
Nominated by former students and selected from over 50 teaching assistants in the Computer Sciences Department as the sole recipient of this award for 2006.
- 1999 **E.O. Ringstad Prize in Philosophy**, *St. Olaf College.*
Awarded prize in philosophical essay competition.

Select Publications

William C. Benton and Charles N. Fischer. Interactive, scalable, declarative program analysis: from prototype to implementation. In *Proceedings of the 9th ACM SIGPLAN International Symposium on Principles and Practice of Declarative Programming (PPDP '07)*, pages 13-24. July 2007.
20 of 87 papers accepted (23%)

William C. Benton, ed. <http://compiler-tools.org/>. *A Catalog of Research Compilers and Tools.* Curated web directory for programming language and compiler researchers.

William C. Benton. “Improving System Security with Loadable Kernel Module Exploits.” *Linux Journal*. September 2001.