

Justin David Smith

Graduate Student
justins (at) cs.caltech.edu
Phone number available on request

Objective: Employment as a software engineer at a firm developing cutting-edge technologies, where creative thinking and logical problem solving techniques are emphasized to solve modern technological problems.

Education

M.S., Computer Science Expected June 2003
California Institute of Technology Cumulative GPA: 4.2

- Thesis title: *Fault Tolerance using Whole-Process Migration and Speculative Execution*
- Thesis advisor: Prof. Jason Hickey

B.S. with Honors, Engineering and Applied Sciences June 2001
California Institute of Technology Cumulative GPA: 3.9

Courses taken for B.S. and M.S. degrees include:

- Computational Theory and Algorithms
- Information and Complexity Theory
- Functional Programming Theory
- Computer Graphics
- Computational Vision
- Operating Systems
- Compiler Theory and Design
- Distributed Systems and Formal Design
- Object-Oriented Program Design
- Digital Design (hardware and software)
- Solid State Integrated Electronics lab
- Swarm Intelligence
- Artificial Life
- Learning Systems.

High School Diploma, with Honors May 1997
Texas Academy of Mathematics and Science Cumulative GPA: 4.0

- Two years of college credit earned while completing high school at University of North Texas.
- College credits earned include Calculus through Differential Equations, Assembly Language Programming, Biology, Physics, and Chemistry.

Work Experience

Teaching Assistant for *Compilers and Operating Systems* Sept. 2001 — Present
Prof. Jason Hickey, Caltech CS Department Head T.A. Sept. 2002 — Present

- Tutoring students on operating systems concepts, including kernel, memory management, filesystems, threading, and security. Also, tutoring students on compiler design including lexing, parsing, program transformation, assembly code generation, and garbage collection.
- Duties include leading recitations, grading assignments, and teaching lectures periodically.

Research Assistant July 2001 — Present
Prof. Jason Hickey, Caltech CS Department

- Research in the implementation of reliable computing in faulty distributed networks.
- Development on Mojave Compiler (MCC), focusing on design and implementation of whole-process migration and speculative execution primitives.
- Implementation of Intel IA32 backend for MCC, and runtime garbage collection support.
- Development of a comprehensive test suite for MCC known as the Regression Evaluation Interface (REI).

SURF Summer Research June 2000 — Aug. 2000
Prof. James Arvo, Caltech CS Department

- Enhanced the design of a handwriting recognition system by adding support for recognition modules, and implemented new recognition algorithms, analysis software, and display algorithms.

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Teaching Assistant for *Introduction to Computation*

Prof. James Arvo, Caltech CS Department

Oct. 1999 — June 2001

Head T.A. Sept. 2000 — June 2001

- Tutored individual students on automata theory, complexity theory, numerical analysis and graphics, and also provided instruction on LISP programming.
- Duties included grading assignments and laboratories, and giving lectures.

ITS Student Representative

Anthony Nguyen, Caltech ITS Department

Jan. 1999 — Nov. 2000

- Administered a network of UNIX and MS Windows machines for a student computer lab.
- Assisted individual students with computer-related problems.

NT Server Developer

David Derkits, Caltech ITS Department

June 1998 — Dec. 1998

- Developed UNIX-to-NT account synchronization program, UNIX-Samba-NT password synchronization system, and utility to synchronize Personnel/Student Databases with Exchange Addressbook.

Office Processor

PMSI, L.P.

June 1996 — Aug. 1996

July 1997 — Aug. 1997

- Designed databases for accounting, supply request and tracking, and ISO 9000 Document Control.

Skills

Programming Languages

- C, C++ (GCC, MS Visual Studio)
- Assembly (Intel IA32, Motorola MC68HC11)
- ML (SML, OCaml)
- Java (also Javadoc, JUnit)
- Mathematica
- Matlab
- HTML, CSS, Javascript, and Apache SSI
- \TeX (\LaTeX , $\text{\AMS-}\text{\LaTeX}$, and \jTeX)
- Groff Document Formatting System
- LISP (CLISP), Scheme
- Tcl/Tk
- Object Pascal (also Delphi)
- BASIC (Visual Basic, VBScript)
- Shell scripting (Bourne, C-Shell)
- M4 macro system
- Perl (currently learning).

Programming Libraries and Build Tools

- Standard C, C++ libraries including socket, STL
- OpenGL and related libraries
- X11 Window System (and XShm, Athena)
- GTK+ widget set, Glib
- Microsoft DAPI (Directory API)
- Microsoft MAPI (Messaging API)
- Automake and Autoconf build tools.

Operating Systems

- Extensive experience administering custom-built Linux machines since 1996.
- Administration of Slackware, RedHat, and Debian Linux systems, and MS Windows NT 4.0 servers.
- Independently trained beginning users in the use of MS Windows and Linux.
- Use of SunOS/Solaris, IRIX, HPUX, FreeBSD, and NetBSD.

Recreational Programming Projects

- Extensive recreational programming in MS-DOS, MS Windows, and Linux since 1992, developing games (both game engines and graphics), graphics demos and screensavers, and specialized languages.
- Co-founder and co-maintainer of `xpuyopuyo` and `xscorch`, 2-D network-enabled games written for X11.
- Implementation of new features in the Linux kernel: scheduler, locking primitives, filesystem.
- Implementation of a multi-course grade book and homework submission system known as Osaka.
- Implementation of web-based interface for manipulating images stored in a directory hierarchy.

Other Interests

Japanese culture and history, Japanese language studies, and recreational game programming.