C. Scott Ananian
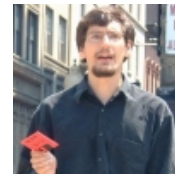
Hacker and rabble-rouser.

103 Griggs Road
Brookline, MA 02446
☎ *(617) 233-1238*
✉ *cscott@cscott.net*
🖥 *cscott.net*

Education

2000–2007	**Doctor of Philosophy**, *Massachusetts Institute of Technology*.
	Department of Electrical Engineering and Computer Science.
	Program Analysis and Compilation Group. Martin Rinard, advisor.
1997–2000	**Master of Science**, *Massachusetts Institute of Technology*.
	Department of Electrical Engineering and Computer Science.
	Thesis: *The Static Single Information Form*.
1993–1997	**Bachelor of Science and Engineering**, *Princeton University*.
	Department of Electrical Engineering. Concentration in Computer Engineering.
	Focus on operating systems and hardware design and implementation.
	Certificate from the Program in Theatre and Dance. GPA: 3.98.

Doctoral thesis

title	*Architectural and Compiler Support for Strongly Atomic Transactional Memory*
committee	Prof. Martin Rinard, Prof. Charles Leiserson, Dr. Bradley Kuszmaul
description	The design and implementation of three efficient transactional memory systems: an object-oriented software-only system, a scalable hardware system using a custom processor extension, and a hybrid of the two systems which combines the strengths of each. *See cscott.net/Publications.*

Experience

2015–present	**Town Meeting Member**, Brookline, MA.
	Introduced 3 warrant articles as an elected representative for precinct 10 of Brookline, MA.
2013–present	**Senior Features Engineer**, *Wikimedia Foundation*, San Francisco, CA.
	Led work to modernize the LanguageConverter infrastructure which translates Wikipedia articles between writing systems in 10 different languages. Drove effort to deploy real-time collaborative editing on the Wikimedia platform. Contributed to the foundation's next-generation wikitext/DOM parser and OOjs UI framework. *See https://wikimediafoundation.org/wiki/User:CAnanian_(WMF).*
2011–2013	**Director, New Technologies**, *One Laptop per Child*, Cambridge, MA.
	Led exploration of next-generation software architecture and prototyped educational applications on a JavaScript/Firefox/Android stack. Participated in system design of XO-4 tablet and bring-up of XO-1.75 laptop with Chinese OEM. Software lead for Ethiopian literacy project, where we demonstrated acquisition of early literacy skills via unsupervised use of tablet computers. Implemented XO Stick, XOrdiuno, and XO-Bot, low-cost Arduino-based systems for electronics education. *See cananian.livejournal.com/tag/olpc.*
2009–2011	**Senior Software/Hardware Architect**, *litl, LLC*, Boston, MA.
	Led hardware design for keyboard/trackpad RF remote for set top box project, including managing two Taiwanese/Chinese OEMs, creating and approving schematics and PCB layouts, managing the build process, and supervising the production line. Wrote all embedded firmware for the remote, including over-the-air update system and USB stack with HID, audio, and DFU functionality. Also implemented update system for the Linux-based litl OS, contributed to JavaScript runtime and bindings to native code, and python/Google App Engine server component. *See http://www.fastcompany.com/1646754.*
2007–2009	**Software engineer**, *One Laptop per Child*, Cambridge, MA.
	Improved the education of over 600,000 children as a Linux software generalist. Build manager for first OLPC production software release. Built database-backed manufacturing server to record every laptop on the production line and generate cryptographic material for security system, working with Chinese OEM. Created software update system based on new copy-on-write filesystem. Implemented theft-deterrent security system. Designed new filesystem and network architectures.

1997–present	**Linux kernel hacker**, Cambridge/Brookline, MA.
	IPv6 RDNSS patches, fsnotify reviews. Implemented Unix98 pty support. Major early contributor to `devfs` (2.1.x kernels). Debugged/maintained port to 68k Macintosh machines (2.0.x and 2.2.x kernels). Extended power management (APM 1.2). Other bugfixes and improvements.
1997–present	**Open source software author/maintainer**, Cambridge/Brookline, MA.
	Over 140 repositories on github, 27 packages on npm. Maintain the `domino` DOM implementation for Node which is downloaded over 27,000 times per month. *Much more at github.com/cscott.*
2004–2005	**Lead programmer**, *Verified Voting Foundation*, Cambridge, MA and San Francisco, CA.
	Design and implementation of the *Election Incident Reporting System*, which collected over 43,000 incident reports during the 2004 and 2005 US elections. *See voteprotect.org.*
1998–2007	**Primary author, FLEX Java compiler and runtime**, *MIT*, Cambridge, MA.
	Wrote the FLEX static whole-program compiler for Java and its runtime system. Authored the vast majority of its over 290,000 lines of Java and C code. Coordinated contributions from 21 researchers, who collectively used FLEX to produce 25 published papers. *See flex.cscott.net/Harpoon.*

Skills

programming	JavaScript, Java, C, Python, PHP, etc	web standards	HTML5, XHTML, CSS, SVG, SQL
assembly	ARM, PowerPC, SPARC, x86, 68k	microcontrollers	AVR, PIC, 8051, MC68HC11
admin	Debian Linux, Apache, Tomcat	build tools	git, autoconf, automake, ant, Eclipse
press	LaTeX, Scribus, Inkscape	hardware	Eagle, OrCAD, gschem, pcb, VHDL
language	Spanish	fabrication	Bridgeport CNC, laser cutter, waterjet

Selected publications

Growing Up with Nell: A Narrative Interface for Literacy. C. Scott Ananian, Chris J. Ball, and Michael Stone. *The 11th International Conference on Interaction Design and Children (IDC 2012)*, Bremen, Germany, June 2012.

Unbounded Transactional Memory. C. Scott Ananian, Krste Asanović, Bradley C. Kuszmaul, Charles E. Leiserson, and Sean Lie. *IEEE Micro Special Issue: Top Picks from Computer Architecture Conferences*, January/February 2006.

Efficient Object-Based Software Transactions. C. Scott Ananian and Martin Rinard. In *Synchronization and Concurrency in Object-Oriented Languages (SCOOL)*, San Diego, CA, October 2005.

Direct Addressed Caches for Reduced Power Consumption. Emmett Witchel, Sam Larsen, C. Scott Ananian, and Krste Asanović. In *Proceedings of the 34th Annual ACM/IEEE International Symposium on Microarchitecture (MICRO-34)*, Austin, Texas, December 2001.

Criminal Code? C. Scott Ananian. *Salon* magazine, February 9, 2000.

Awards

top pick	*Unbounded Transactional Memory* included in *IEEE Micro*'s 2005 "Top Picks from Computer Architecture Conferences" issue.
honor societies	Member of Phi Beta Kappa, Tau Beta Pi, and Sigma Xi. "Outstanding Academic Achievement" from Princeton School of Engineering.

Projects and interests

transactions	Designed and implemented software, hardware, and hybrid transactional memory systems.
embedded	Built embedded systems including set top box remote for litl, XOrduino/XO Stick for OLPC, PiXoR modem encryption device, Chirp/Cheap DMX dongles, MicroMouse robot, laser text projector, and a StrongARM mobile vision platform.
activism	Lobbied Congress for voter-verifiable election systems, organized rallies in protest of the DMCA, and had a small part in exposing illegal election practices by Diebold.
khipu	Participant in the MIT Khipu Research Group, which is attempting computer-aided analysis of ancient South American knotted-cord artifacts. Digitized khipu in a German collection.