

# Daniel Ellard

ellard "at" eeecs.harvard.edu  
<http://www.eecs.harvard.edu/~ellard/>

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## INTERESTS

Storage systems, distributed systems.

## EMPLOYMENT

- **Member of Technical Staff**, Network Appliance, Advanced Development Group, April 2006–Present
- **Member of Technical Staff**, Sun Microsystems Laboratories, June 2004–April 2006  
Research in large-scale, long-lived distributed systems.
- **Research Assistant**, Harvard University, September 1996–June 2004  
Research in file systems, distributed systems, and pedagogical techniques for computer science education.
- **Instructor**, Harvard University Summer School, Summer 1997, Summer 1998  
Professor for *CSCI S-Q - Data Structures and Algorithms*. Responsibilities included selection of syllabus and choice of texts, preparation of course materials, lecturing, grading, hiring and supervision of teaching assistants, and consultation with students.
- **Head Teaching Assistant**, Harvard University, Fall Semester 1994-1996  
Head Teaching Assistant for *Introduction to Computer Science I*. Responsibilities included recruiting, interviewing and training course staff, course administration, preparation of course materials, lecturing, grading, and consultation with students.
- **Teaching Assistant**, Harvard University, Spring 1992–Fall 2002  
Responsibilities included preparation of course materials, lecturing, grading, and consultation with students.
  - Advanced Introduction to Database Systems (*Fall 2000, Fall 2002*)
  - Introduction to Distributed Computing (*Spring 1999*)
  - Introduction to Computer Science I (*Fall 1993 through Fall 1996*)
  - Introduction to Computer Science II (*Spring 1992, Spring 1993*)
- **Scientist**, BBN (Bolt, Beranek and Newman), June 1986–August 1996.  
Member of the Intelligent Systems department, working on logistics and planning tools. Designed and implemented a prototype distributed collaborative planning system for military operations.  
Group leader and technical lead responsible for the design and implementation of the BBN Hark Developer's Toolkit, a key component of the BBN Hark speaker-independent continuous speech recognition system. Designed and implemented the BBN Hark grammar compiler. Experience in the planning, scheduling, and execution of programming projects and working in project teams.  
Designed and implemented a TCP/IP-based fault-tolerant distributed process scheduler for a network of workstations. Created a suite of tools to support a distributed message passing programming model on MIMD architectures. Participated in the port of a 300,000-line statistical application (BBN RS/1) to SunOS. Ported code, revised documentation, and created a SunView graphical interface.

Systems and applications programming for the BBN Butterfly+ and SUN workstations. Wrote Chrysalis device drivers for array processors, Ethernet, and tape devices. Implemented UNIX device drivers. System administration of a network of SUN workstations and a BBN GP-1000 running MACH-1000.

## EDUCATION

- **Ph.D. in Computer Science**, Harvard University, Cambridge, MA – June 2004.  
Thesis: *Trace-Based Analyses and Optimizations for Network Storage Servers*  
Thesis Committee: Margo Seltzer (advisor), Jim Waldo, Matt Welsh, Michael Rabin.  
Research in file systems, distributed systems, and pedagogical techniques for computer science education. Course work and research in distributed systems, randomized algorithms, statistical analysis, and cognitive psychology.
- **M.S. in Computer Science**, Harvard University, Cambridge, MA – June 1992.  
Advisor: Thomas Cheatham. Advanced study programming languages, parallel computation, and efficient algorithms. Projects included an automatically parallelizing LISP interpreter for MIMD architectures, an optimizing code generator for an ANSI C compiler, Connection Machine programming, and a compiler for a polymorphic functional programming language.
- **B.A. in Computer Science**, Harvard University, Cambridge, MA – June 1986.  
Independent research in distributed operating systems, including the implementation of a simulator for a multiprocessor system, a distributed operating system to run on this simulator, and a distributed file system for UNIX workstations. Course work in operating systems, compilers and language design, graphics, logic, data structures, algorithms, and the theory of computation.

## PROFESSIONAL ACTIVITIES

- **Program Committee**, FAST'05.
- **External Reviewer** for ACM Transactions on Storage, ACM Computing Surveys, HotOS'05, DCCS'05, DSN'04, OSDI'04, FAST'04, FAST'07, Addison-Wesley, and others.
- **Founder and Technical Lead**, the ANT Project, Fall 1996–Present  
Founded the ANT project, an initiative funded by the NSF, Microsoft, and Apple Computer, to design and implement simple yet full-featured 8-bit and 32-bit architectures for use in CS courses (used at Harvard, CMU, Boston College, Wabash University, and others). Implemented a simulator, assembler, and debugger for each architecture. Wrote assembly language tutorials and other teaching material for both architectures.
- **Resident Tutor**, Lowell House, Harvard University, Fall 1998–Spring 2003.  
Resident tutors are Harvard affiliates who are provided with on-campus housing and appointed Officers of the University. Responsibilities include mentoring, advising, and tutoring undergraduates, and providing academic, professional, and personal guidance.

## SKILLS

C, Java, LISP/Scheme, Perl, Tcl/Tk, HTML, Assembly language

## RECENT PUBLICATIONS

- Daniel Ellard and James Megquier. “DISP: Practical, efficient, secure and fault-tolerant distributed data storage.” *ACM Transactions on Storage*, Vol 1. No. 1, pages 71–94, December 2004.
- Ningning Zhu, Jiawu Chen, Tzi-cker Chiueh, and Daniel Ellard. “TBBT: Scalable and Accurate Trace Replay for File Server Evaluation.” Extended abstract in *Proceedings of the ACM International Conference on Measurement & Modeling of Computer Systems (SIGMETRICS’05)*, pages 392–393, June 2005.
- Michael Mesnier, Eno Thereska, Daniel Ellard, Gregory R. Ganger and Margo Seltzer. “File classification in self-\* storage systems.” *Proceedings of the First International Conference on Autonomic Computing (ICAC-04)*, pages 44–51, May 2004.
- Daniel Ellard and Margo Seltzer. “New NFS Tracing Tools and Techniques for System Analysis.” *Proceedings of the 17th Large Installation System Administration Conference (LISA’03)*, pages 73–85, October 2003.
- Daniel Ellard and Margo Seltzer. “NFS Tricks and Benchmarking Traps.” *Proceedings of the 2003 USENIX Annual Technical Conference, FREENIX Track (FREENIX’03)*, pages 101–114, June 2003.
- Daniel Ellard, Jonathan Ledlie, Pia Malkani and Margo Seltzer. “Passive NFS Tracing of Email and Research Workloads.” *Proceedings of the Second USENIX Conference on File and Storage Technologies (FAST’03)*, pages 203–216, March 2003.
- Daniel Ellard, David Holland, Nicholas Murphy and Margo Seltzer. “On the Design of a New CPU Architecture for Pedagogical Purposes.” *Proceedings of the Workshop on Computer Architecture Education (WCAE’02)*, pages 28–34, May 2002.
- Daniel Ellard, Penelope Ellard, James Megquier and J. Bradley Chen. “The ANT Architecture - An Architecture for CS1.” *Newsletter of the IEEE Computer Society Technical Committee on Computer Architecture*, July 1999.

## COURSE TEXTS AND TUTORIALS

- Daniel Ellard and Penelope Ellard. “Ant-32 Assembly Language Tutorial.” Harvard Computer Science Technical Report TR-09-02, May 2002.
- Daniel Ellard and Penelope Ellard. “S-Q Course Book.” *Data Structures and Algorithms (S-Q) Course Materials*, Harvard Summer School, August 1998. <http://www.eecs.harvard.edu/~ellard/Courses/>
- Daniel Ellard and Penelope Ellard. “Data Representation and Assembly Language Programming – The ANT-97 Architecture.” *Introduction to Computer Science I Course Materials*, Harvard University, October 1997.
- Daniel Ellard. “MIPS Assembly Language Programming.” *Introduction to Computer Science II (CS 50) Course Materials*, Harvard University, March 1994. <http://www.eecs.harvard.edu/~ellard/Courses/>

## REFERENCES

Available on request.