

## **Allen B. Downey**

### **Education:**

Ph.D. Computer Science, University of California at Berkeley, May 1997.

M.S. Civil Engineering, Massachusetts Institute of Technology, August 1990.

B.S. Civil Engineering, Massachusetts Institute of Technology, June 1989.

### **Employment:**

Franklin W. Olin College of Engineering, Associate Professor of Computer Science, August 2003 to present.

Google Inc., Visiting Scientist, January 2009 to December 2010.

Boston University, Adjunct Faculty, December 2003 to December 2008.

Boston University, Research Fellow, July 2002 to July 2003.

Wellesley College, Assistant Professor of Computer Science, July 2000 to June 2002.

Colby College, Assistant Professor of Computer Science, July 1997 to June 2000.

San Diego Supercomputer Center, Research Fellow, July 1995 to June 1997.

### **Publications:**

Recent publications available from [www.allendowney.com](http://www.allendowney.com)

### **Peer-reviewed journals:**

“TCP Self-Clocking and Bandwidth Sharing,” *Computer Networks*, 51(13), pages 3844-3863, September 2007.

“Lognormal and Pareto Distributions in the Internet,” *Computer Communications*, 28(7), pages 790-801, May 2005.

“The elusive goal of workload modeling,” with Dror Feitelson, *ACM Sigmetrics Performance Evaluation Review*, special issue on Scheduling in Multiprogrammed Parallel Systems, edited by Kenneth Sevcik, 26(4), pages 14-29, March 1999.

“A parallel workload model and its implications for processor allocation,” *Cluster Computing*, 1(1), pages 133–145, 1998.

“Exploiting process lifetime distributions for dynamic load balancing,” with M. Harchol-Balter, *IEEE Transactions on Computer Systems*, 15(3), pages 253–285, August 1997.

“Improved models for classification of pavement images,” with H.N. Koutsopoulos and V. Kapotis, *Transportation Research C*, 2C(1), 1994.

“Analysis of segmentation algorithms for pavement distress images,” with H.N. Koutsopoulos and I. El Sanhoury, *Journal of Transportation Engineering*, 119(6), 1993.

“Primitive-based classification of pavement cracking images,” with H.N. Koutsopoulos, *Journal of Transportation Engineering*, 119(3), 1993.

#### **Peer-reviewed conferences:**

“A semi-automatic approach for project assignment in a capstone course,” with Mark Chang, ASEE Annual Conference, June 2008.

“Designing a small-footprint curriculum in computer science,” with Lynn Andrea Stein, Frontiers in Education (FIE) Conference, October 2006.

“An empirical model of TCP performance,” IEEE MASCOTS, pages 45–54, September 2005.

“Evidence for long-tailed distributions in the Internet,” ACM SIGCOMM Internet Measurement Workshop, pages 229–241, November 2001.

“The structural cause of file size distributions,” IEEE MASCOTS, pages 361–370, August 2001.

“The structural cause of file size distributions,” poster and extended abstract, ACM SIGMETRICS '01, pages 328–329, June 2001.

“Using `pathchar` to estimate Internet link characteristics,” ACM SIGCOMM '99, pages 241–250, August 1999.

“Using pathchar to estimate Internet link characteristics,” poster and extended abstract, ACM SIGMETRICS '99, pages 222–223, May 1999.

“Teaching experimental design in an operating systems class,” ACM SIGCSE '99, pages 316-320, March 1999.

“Lachesis: a job scheduler for the Cray T3E,” 4th Annual Workshop on Job Scheduling Strategies for Parallel Processors, at the merged 12th International Parallel Processing Symposium and 9th Symposium on Parallel and Distributed Processing, April 1998.

“The cost of interactive jobs on supercomputers,” with Victor Hazlewood, Semi-Annual Cray User Group Meeting, May 1997.

“Using queue time predictions for processor allocation,” Workshop on Job Scheduling Strategies for Parallel Processing, Springer-Verlag Lecture Notes on Computer Science Vol 1291, 1997.

“A parallel workload model and its implications for processor allocation,” IEEE International Symposium on High Performance Distributed Computing (HPDC), August 1997.

“Predicting queue times on space-sharing parallel computers,” 11th International Parallel Processing Symposium (IPPS), April 1997.

“Exploiting process lifetime distributions for dynamic load balancing,” with M. Harchol-Balter, Best Integration of Systems and Theory award, ACM SIGMETRICS '96, May 1996.

“Exploiting process lifetime distributions for dynamic load balancing,” with M. Harchol-Balter, poster, Symposium on Operating Systems Principles (SOSP), December 1995.

#### **Book chapters:**

“Exploiting process lifetime distributions for dynamic load balancing,” with Mor Harchol-Balter, in *Mobility: Processes, Computers, and Agents*, edited by Dejan S. Milojevic, Frederick Douglass, and Richard G. Wheeler, Addison Wesley and the ACM Press, April 1999, pages 214-227.

#### **Technical reports:**

“A novel changepoint detection algorithm,” <http://arxiv.org/abs/0812.1237v1>, December 2008.

“A changepoint detection algorithm for network measurements,” Olin College Technical Report, August 2006.

“An empirical model of TCP performance,” Olin College Technical Report TR-2003-001, August 2003.

“A model for speedup of parallel programs,” U.C. Berkeley Technical Report CSD-97-933, January 1997.

“A note on ‘The Limited Performance Benefits of Migrating Active Processes for Load Sharing,’” with M. Harchol-Balter, U.C. Berkeley Technical Report CSD-95-888, November 1995.

“VIGL 3.0: Visualization Graphics Library,” U.C. Berkeley Technical Report CSD-95-000, August 1995.

“VIGL: Visualization Graphics Library,” U.C. Berkeley Technical Report CSD-93-764, 1993.

**Textbooks:**

*Think Stats: Probability and Statistics for Programmers*, Green Tea Press, January 2010.

*Python for Software Design*, Cambridge University Press, March 2009.

*How to think like a computer scientist: Java Programming*, CreateSpace, March 2009.

*How to think like a computer scientist: C++ Version*, CreateSpace, March 2009.

*Computational Modeling and Complexity Science*, CreateSpace, March 2009.

*Learning Perl the Hard Way*, CreateSpace, March 2009.

*The Little Book of Semaphores*, CreateSpace, March 2009.

*Think Python: An Introduction to Software Design*, CreateSpace, February 2009.

*Physical Modeling in MATLAB*, Green Tea Press, January 2008.

*How to think like a computer scientist: Learning with Python*, Green Tea Press, January 2002.

**Invited talks:**

Delft University of Technology, “Changepoint detection for time series prediction,” June 2008.

College of the Atlantic, “Understanding the Internet,” May 2008.

University of Richmond, “Why is Internet Traffic Self-Similar (or Is It)?,” March 2008.

Santa Fe Institute, “Why is Internet Traffic Self-Similar (or Is It)?,” January 2008.

San Diego Supercomputer Center, “Changepoint detection in network measurements,” October 2006.

Boston University, “TCP Self-clocking,” April 2004.

Intel Research Laboratory, Cambridge University, “Modeling TCP Performance,” May 2003.

Olin College of Engineering, “Understanding the Internet,” March 2003.

Worcester Polytechnic Institute, “Modeling TCP Performance,” February 2003.

Cooperative Association for Internet Data Analysis, San Diego Supercomputer Center, “Modeling TCP Performance,” February 2003.

University of California at Santa Barbara, “Modeling TCP Performance,” February 2003.

Boston University, “Modeling TCP Performance,” January 2003.

Worcester Polytechnic Institute, “Why is Internet traffic self-similar?” March 2002.

Boston University, “Why is Internet traffic self-similar?” July 2001.

University of Delaware, “Why is Internet traffic self-similar?” May 2001.

Internet Statistics and Metrics Analysis (ISMA) Winter 2000 Workshop, “Using `pathchar` to estimate Internet link characteristics,” December 2000.

University of California at San Diego, “The structural cause of file size distributions,” December 2000.

Wellesley College, “Peering into the Internet with `pathchar` and `netchar`,” January 2000.

Cisco Systems, “From `pathchar` to `netchar`: keeping an eye on your ISP,” November 1999.

Bowdoin College, “Teaching experimental design in an operation systems class,” February 1999.

University of California at San Diego, “Lachesis: a job scheduler for the Cray T3E”, January 1998.

University of California at San Diego, “Predicting queue times on space-sharing parallel computers”, October 1996.

Sandia National Labs, “Exploiting process lifetime distributions for dynamic load balancing,” June 1996.

**Workshops/Tutorials/Panels:**

“Ideation Workshop,” at Google, Inc., December 2009 and July 2010.

“Python as a First Language,” at Consortium for Computing Sciences in Colleges, Northeast Division, April 2007.

“Integrating Empirical Methods into Computer Science,” at ACM SIGCSE '02, February 2002.

“How to teach CS1 using Java,” at Consortium for Computing in Small Colleges, New England (CCSC-NE), April 1998.