CURRICULUM VITAE

Michael D. Smith

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EDUCATION

Stanford University. Doctor of Philosophy in Electrical Engineering, January 1993.

Worcester Polytechnic Institute. Master of Science in Electrical Engineering, May 1985.

Princeton University. Bachelor of Science in Electrical Engineering and Computer Science, June 1983.

ACADEMIC EXPERIENCE

8.2018 – **Harvard University Distinguished Service Professor**, Harvard University, Cambridge, Massachusetts.

10.2008 – **John H. Finley, Jr. Professor of Engineering and Applied Sciences**, Harvard University, Cambridge, Massachusetts. Areas of interest: Computer Architecture, Compilers, Security and Privacy, Education.

7.2007 – 8.2018 **Edgerley Family Dean of the Faculty of Arts and Sciences**, Harvard University, Cambridge, Massachusetts.

7.2005–7.2007 **Associate Dean for Computer Science and Engineering**, Harvard University, Cambridge, Massachusetts.

1.2000–9.2008 **Professor**, Harvard University, Cambridge, Massachusetts.

7.1997–12.1999 **Associate Professor**, Harvard University, Cambridge, Massachusetts.

2.1993–6.1997 **Assistant Professor**, Harvard University, Cambridge, Massachusetts.
• Director of Undergraduate Studies in Engineering Sciences (9/94–9/97).

12.1992–1.1993 **Instructor**, Harvard University, Cambridge, Massachusetts.

10.1986–11.1992 **Research Assistant**, Stanford University, Stanford, California.
• Assisted in research into superscalar and parallel processors;
• Actively participated in the development of the SUIF research compiler;
• Was primary architect of the TORCH project, an early superscalar microprocessor;
• Assisted in the VLSI redesign of MIPS-X, a CMOS RISC processor.

10.1991–12.1991 **Teaching Assistant and Lecturer**, Stanford University, Stanford, California. Assisted in the creation and teaching of a new, graduate-level course on superscalar processor design.

10.1989–12.1989 **Teaching Assistant**, Stanford University, Stanford, California. Assisted with a graduate-level, computer architecture course of 80-100 students.

7.1987–1.1988 **Research Intern**, Digital Equipment Corporation Systems Research Center, Palo Alto, California. Worked on logic simulators.

3.1986–6.1986 **Teacher**, Honeywell Information Systems, Billerica, Massachusetts. Taught an after-hours class on advanced microprocessor design for Honeywell's Technical Development Program.

PROFESSIONAL EXPERIENCE

1.2020– **Advisor**, Xfund, Cambridge, Massachusetts.

6.2019– **Member of the Board of Trustees**, The Peddie School, Hightstown, New Jersey.

6.2019 –	**Member of the Strategic Advisor Board**, GSV Ventures, San Francisco, California.
10.2017 –	**Special Advisor**, 1984 Ventures Management, LLC, San Francisco, California.
5.2012 – 8.2018	**Board of Directors**, edX, Cambridge, Massachusetts.
1.2001–7.2007	**Founder**, **Chief Scientist**, and **Chairman**, Liquid Machines, Lexington, Massachusetts. A data security company, whose enterprise rights management products gave companies the ability to easily control and manage access to valuable documents and other digital assets. Liquid Machines was acquired by Check Point Software Technologies Ltd. in June 2010.
4.1993–12.1993	**Consultant**, Kendall Square Research, Waltham, Massachusetts.
3.1989–9.1990	**United States Swimming Coach**, Palo Alto Swim Club, Palo Alto, California. Coached 7–12-year-old swimmers on an Age Group swim team of 100 members.
7.1983–9.1986	**Product Engineer**, Honeywell Information Systems, Billerica, Massachusetts. • Participated in an Advanced Engineering Program, consisting of rotating work assignments of own choosing in parallel with graduate education. • Developed a processor board and designed major logic blocks on a fully-custom, VLSI NMOS Virtual Memory Management Unit, both for the minicomputer product line.

ACADEMIC SERVICE

2019–2020	Chair, FAS Search Advisory Committee for the next director of Harvard Athletics. Member, SEAS Committee on Higher Degrees.
7.2006–7.2007	Co-Director, Information, Technology and Management (ITM) Program, joint Ph.D. program between SEAS and HBS.
9.2005–11.2006	Chair, Steering Committee on NCAA recertification and Self Study.
9.2003–7.2007	Chair, FAS Standing Committee on Athletic Sports.
9.2003–6.2004	Chair, DEAS Committee on Teaching Practice.
9.2001–6.2005	Chair, DEAS Committee on IT and Computer Services.
2006–2007	Co-chair, FAS Research Computing/Infrastructure Committee. Member, Initiative in Innovative Computing (IIC) Steering Committee, Committee on Security and Privacy in the Center for Research on Computation and Society (CRCS), SEAS Technology Development Advisory Committee, SEAS Committee on IT and Computer Services, SEAS Committee of Seven, SEAS Committee on Undergraduate Studies in Computer Science, SEAS Committee on Undergraduate Studies in Engineering Sciences, SEAS Undergraduate Education Committee, Cabot House Review Committee, Standing Committee on Higher Degrees in Business Studies and the Subcommittee on the Degree of Doctor of Philosophy in Information Technology and Management, SEAS faculty search and promotion committees.
2005–2006	Member, Initiative in Innovative Computing (IIC) Steering Committee, Committee on Security and Privacy in the Center for Research on Computation and Society (CRCS), DEAS Committee of Seven, DEAS Committee on Undergraduate Studies in Computer Science, DEAS Committee on Undergraduate Studies in Engineering Sciences, DEAS Committee on IT and Computer Services, Standing Committee on Higher Degrees in Business Studies and the Subcommittee on the Degree of Doctor of Philosophy in Information Technology and Management, DEAS faculty search and promotion committees.
2004–2005	Member, FAS Committee on Science and Technology Education, Committee on Security and Privacy in the Center for Research on Computation and Society (CRCS), DEAS Committee on Teaching Practice, DEAS Committee on Undergraduate Studies in Computer Science, Standing Committee on Higher Degrees in Business Studies and the Subcommittee on the Degree of Doctor of Philosophy in Information Technology and Management, DEAS faculty search and promotion committees.

2003–2004	Member, DEAS Committee on Undergraduate Studies in Computer Science, DEAS TECH Advisory Group, Standing Committee on Higher Degrees in Business Studies and the Subcommittee on the Degree of Doctor of Philosophy in Information Technology and Management, DEAS faculty search and promotion committees.
2002–2003	Member, DEAS Engineering Curriculum Committee, Committee on Undergraduate Studies in Computer Science, Committee on Instructional Labs, Standing Committee on Higher Degrees in Business Studies and the Subcommittee on the Degree of Doctor of Philosophy in Information Technology and Management, DEAS faculty search and promotion committees.
2001–2002	Member, DEAS Committee on Teaching Practice, Committee on Undergraduate Studies in Computer Science, Committee on Instructional Labs, DEAS faculty search and promotion committees.

REFEREED CONFERENCE and JOURNAL PROCEEDINGS

Vijay Janapa Reddi, Svilen Kanev, Wonyoung Kim, Simone Campanoni, Michael D. Smith, Gu-Yeon Wei, David Brooks. "Voltage Noise in Production Processors," IEEE Micro's Top Picks in Computer Architecture Conferences. January 2011.

Vijay Janapa Reddi, Svilen Kanev, Wonyoung Kim, Simone Campanoni, Michael D. Smith, Gu-Yeon Wei, and David Brooks. "Voltage Smoothing: Characterizing and Mitigating Voltage Noise in a Production Processor Using Software-Guided Thread Scheduling," Proceedings of the 43rd IEEE/ACM International Symposium on Microarchitecture (MICRO), December 2010.

Vijay Janapa Reddi, Simone Campanoni, Meeta S. Gupta, Kim Hazelwood, Michael D. Smith, Gu-Yeon Wei, and David Brooks. "Eliminating Voltage Emergencies via Software-Guided Code Transformations," ACM Transactions on Architecture and Code Optimization (TACO), Volume 7, Issue 2, September 2010.

Vijay Janapa Reddi, Meeta S. Gupta, Glenn Holloway, Michael D. Smith, Gu-Yeon Wei, and David Brooks. "Predicting Voltage Droops Using Recurring Program and Microarchitectural Event Activity," IEEE Micro's Top Picks in Computer Architecture Conferences, January 2010.

Vijay Janapa Reddi, Simone Campanoni, Meeta S. Gupta, Michael D. Smith, Gu-Yeon Wei, and David Brooks. "Software-Assisted Hardware Reliability: Abstracting Circuit-level Challenges to the Software Stack," Proceedings of the 46th Design Automation Conference (DAC), July 2009.

Vijay Janapa Reddi, Meeta S. Gupta, Krishna K. Rangan, Simone Campanoni, Glenn Holloway, Michael D. Smith, Gu-Yeon Wei, and David Brooks. "Voltage Noise: Why It's Bad, and What To Do About It," Proceedings of the 5th IEEE Workshop on Silicon Errors in Logic - System Effects (SELSE), March 2009.

Vijay Janapa Reddi, Meeta S. Gupta, Glenn Holloway, Michael D. Smith, Gu-Yeon Wei, and David Brooks. "Voltage Emergency Prediction: A Signature-Based Approach To Reducing Voltage Emergencies," Proceedings of the 15th International Symposium on High-Performance Computer Architecture (HPCA-15), February 2009. Received Best Paper Award.

David J. Malan, Matt Welsh, and Michael D. Smith. "Implementing Public-Key Infrastructure for Sensor Networks," ACM Transactions on Sensor Networks, Volume 4, Issue 4. November 2008.

Meeta S. Gupta, Krishna K. Rangan, Michael D. Smith, Gu-Yeon Wei, and David Brooks. "DeCoR: A Delayed Commit and Rollback Mechanism for Handling Inductive Noise in Microprocessors," Proceedings of the 14th International Symposium on High-Performance Computer Architecture (HPCA-14), February 2008.

Alexandra Fedorova, Margo Seltzer and Michael D. Smith. "Improving Performance Isolation on Chip Multiprocessors via an Operating System Scheduler," Proceedings of the Sixteenth International Conference on Parallel Architectures and Compilation Techniques (PACT), September 2007.

Kelly Heffner, David Tarditi, and Michael D. Smith. "Extending Object-Oriented Optimizations for Concurrent Programs," Proceedings of the 16th International Conference on Parallel Architecture and Compilation Techniques (PACT), September 2007.

Meeta S. Gupta, Krishna K. Rangan, Michael D. Smith, Gu-Yeon Wei, and David Brooks. "Towards a Software Approach to Mitigate Voltage Emergencies," Proceedings of the International Symposium on Low Power Electronics and Design (ISLPED 2007), pages 123-128, August 2007.

Kathleen T. Durant and Michael D. Smith. “The Impact of Time on the Accuracy of Sentiment Classifiers Created from a Web Log Corpus,” Proceedings of the 22nd AAAI Conference on Artificial Intelligence, pages 1340-1346, July 2007.

Rachel Greenstadt, Barbara Grosz, and Michael D. Smith. “SSDPOP: Improving the Privacy of DCOP with Secret Sharing,” Proceedings of the 6th International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS), article number 171, May 2007.

Vijay Janapa Reddi, Dan Connors, Robert Cohn, and Michael D. Smith. “Persistent Code Caching: Exploiting Code Reuse Across Executions and Applications,” Proceedings of the 2007 International Symposium on Code Generation and Optimization (CGO 2007), page 74-88, March 2007.

Kathleen T. Durant and Michael D. Smith. “Predicting the Political Sentiment of Web Log Posts using Supervised Machine Learning Techniques Coupled with Feature Selection,” Advances in Web Mining and Web Usage Analysis, editors Olfa Nasraoui, Myra Spiliopoulou, Jaideep Srivastava, Bamshad Mobasher, and Brij M. Masand, Revised papers of the 8th International Workshop on Knowledge Discovery on the Web (WebKDD 2006), Lecture Notes in Computer Science 4811, Springer, pages 187-206, 2007.

David J. Malan and Michael D. Smith. “Exploiting Temporal Consistency to Reduce False Positives in Host-Based, Collaborative Detection of Worms,” Proceedings of the 4th Workshop on Recurring Malcode (WORM 2006), November 3, 2006.

Kathleen T. Durant and Michael D. Smith. “Mining Sentiment Classification from Political Web Logs,” Proceedings of the ACM SIGKDD Workshop on Web Mining and Web Usage Analysis, held in conjuction with The 12th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2006), August 2006.

Kim Hazelwood and Michael D. Smith. "Managing Bounded Code Caches in Dynamic Binary Optimization Systems," Transactions on Architecture and Code Optimization (TACO), Volume 3, Issue 3, pages 263-294, September 2006.

Rachel Greenstadt and Michael D. Smith. “Collaborative Scheduling: Threats and Promises,” Proceedings of the Fifth Workshop on the Economics of Information Security (WEIS 2006), University of Cambridge, England, June 26–28, 2006.

Alexandra Fedorova, Margo Seltzer, and Michael D. Smith. “A Non-Work-Conserving Operating System Scheduler for SMT Processors,” Proceedings of the Workshop on the Interaction between Operating Systems and Computer Architecture (WIOSCA 2006), held in conjunction with the 2006 International Symposium on Computer Architecture (ISCA-33), June 18, 2006.

David Hiniker, Kim Hazelwood, and Michael D. Smith. “Improving Region Selection in Dynamic Optimization Systems,” Proceedings of the 38th Annual IEEE/ACM International Symposium on Microarchitecture (MICRO-38), pp. 141-154, November 2005.

David J. Malan and Michael D. Smith. “Host-Based Detection of Worms through Peer-to-Peer Cooperation,” Proceedings of the 3rd ACM Workshop on Rapid Malcode (WORM 2005), pp. 72–80, November 2005.

Rachel Greenstadt and Michael D. Smith. “Protecting Personal Information: Obstacles and Directions,” Proceedings of the Fourth Workshop on the Economics of Information Security (WEIS05), June 2005.

Stuart E. Schechter, Rachel A. Greenstadt, and Michael D. Smith. “Trusted Computing, Peer-to-Peer Distribution, and the Economics of Pirated Entertainment,” in Economics of Information Security, Vol. 12 of Advances in Information Security, editors L. Jean Camp and S. Lewis, Kluwer Academic Publishers, Boston, Massachusetts, pages 59–70, 2004.

David J. Malan, Matt Welsh, and Michael D. Smith. “A Public-Key Infrastructure for Key Distribution in TinyOS Based on Elliptic Curve Cryptography,” Proceedings of the First IEEE International Conference on Sensor and Ad Hoc Communications and Networks, October 2004.

Kathleen Durant and Michael D. Smith. “Extracting People’s Names from RSS Feeds Using WordNet,” Proceedings of the Fifth International Conference on Data Mining, WIT Press, pages 33–42, September 2004.

Michael D. Smith, Norman Ramsey, and Glenn Holloway. “A Generalized Algorithm for Graph Coloring Register Allocation,” Proceedings of the ACM SIGPLAN 2004 Conference on Programming Language Design and Implementation (PLDI), pages 277–287, June 2004.

Kim Hazelwood and Michael D. Smith. "Generational Cache Management of Code Traces in Dynamic Optimization Systems," Proceedings of the 36th Annual International Symposium on Microarchitecture (MICRO-36), pages 169–179, December 2003.

Stuart E. Schechter and Michael D. Smith. "Access For Sale: A New Class of Worm," Proceedings of the Workshop on Rapid Malcode (WORM 2003), October 2003.

Kim Hazelwood and Michael D. Smith. "Characterizing Inter-Execution and Inter-Application Optimization Persistence," Proceedings of the Workshop on Exploring the Trace Space for Dynamic Optimization Techniques held in conjunction with the 17th International Conference on Supercomputing, June 2003.

Stuart E. Schechter, Rachel A. Greenstadt, and Michael D. Smith. "Trusted Computing, Peer-to-Peer Distribution, and the Economics of Pirated Entertainment," Proceedings of the 2nd Annual Workshop on Economics and Information Security (WEIS), May 2003.

Stuart E Schechter and Michael D. Smith. "How Much Security is Enough to Stop a Thief? The Economics of Outsider Theft via Computer Systems and Networks," Proceedings of the Seventh Financial Cryptography Conference, pages 122–137, January 2003.

Kathleen Durant and Michael D. Smith. "Predicting UNIX Commands Using Decision Tables and Decision Trees," Proceedings of the Third International Conference on Data Mining, WIT Press, pages 427–436, September 2002.

Kim Hazelwood and Michael D. Smith. "Code Cache Management Schemes for Dynamic Optimizers," Proceedings of the Sixth Annual Workshop on Interaction between Compilers and Computer Architectures held in conjunction with the Eighth International Symposium on High-Performance Computer Architecture, pages 102–110, February 2002.

Zheng Wang and Michael D. Smith. "Progressing Profiling: A Methodology based on Profile Propagation and Selective Profile Collection," Proceedings of the 4th Workshop on Feedback-Directed and Dynamic Optimization, pages 105-116, December 2001.

Erven Rohou and Michael D. Smith. "Dynamically Managing Processor Temperature and Power," Proceedings of the Second Workshop on Feedback-Directed Optimization, held in conjunction with the 32th Annual IEEE/ACM International Symposium on Microarchitecture, pages 73–82, November 1999.

Nikolas Gloy and Michael D. Smith. "Procedure Placement using Temporal-Ordering Information," ACM Transactions on Programming Languages and Systems, 21(5):977–1027, September 1999.

Cliff Young and Michael D. Smith. "Static Correlated Branch Prediction," ACM Transactions on Programming Languages and Systems, 21(5): 1028–1075, September 1999.

Ioannis Papaefstathiou, Aaron Brown, Josh Simer, David Sobel, Jay Sutaria, Shie-Yuan Wang, Trevor Blackwell, Michael D. Smith, and Woody Yang. "An IRAM-Based architecture for a Single-Chip ATM Switch," Proceedings of the 6th International Conference on Electronics, Circuits and Systems (ICECS '99), September 1999.

Gang Chen and Michael D. Smith. "Reorganizing Global Schedules for Register Allocation," Proceedings of the 1999 ACM International Conference on Supercomputing, pages 408–416, June 1999.

Cliff Young and Michael D. Smith. "Better Global Scheduling Using Path Profiles," Proceedings of the 31st Annual ACM/IEEE International Symposium on Microarchitecture, pages 115–123, November 1998.

Omri Traub, Glenn Holloway, and Michael D. Smith. "Quality and Speed in Linear-scan Register Allocation," Proceedings of the ACM SIGPLAN 1998 Conference on Programming Language Design and Implementation, pages 142–151, June 1998.

Mark Horowitz, Margaret Martonosi, Todd C. Mowry, and Michael D. Smith. "Informing Memory Operations: Memory Performance Feedback Mechanisms and Their Applications," ACM Transactions on Computer Systems, 16(2):170–205, May 1998.

Stuart Schechter, Murali Krishnan, and Michael D. Smith. "Using Path Profiles to Predict HTTP Requests," Proceedings of the Seventh International World Wide Web Conference, April 1998.
URL: http://www7.conf.au/programdraft/fullpapers/1917/com1917.htm.

Nikolas Gloy, Trevor Blackwell, Michael D. Smith, and Brad Calder. "Procedure Placement using Temporal Ordering Information," Proceedings of the 30th Annual IEEE/ACM International Symposium on Microarchitecture, pages 303–313, December 1997.

Sarita Adve, Doug Burger, Rudolf Eigenmann, Alasdair Rawsthorne, Michael D. Smith, Catherine Gebotys, Mahmut Kandemir, David Lilja, Alok Choudhary, Jesse Fang, and Pen-Chung Yew. "Changing Interaction of Compiler and Architecture," IEEE Computer, 30(12):51-58, December 1997.

Xiaolan Zhang, Zheng Wang, Nicholas Gloy, J. Bradley Chen, and Michael D. Smith. "System Support for Automatic Profiling and Optimization," Proceedings of the 16th ACM Symposium on Operating Systems Principles, pages 15–26, October 1997.

Cliff Young, David S. Johnson, David R. Karger, and Michael D. Smith. "Near-optimal Intraprocedural Branch Alignment," Proceedings of the ACM SIGPLAN 1997 Conference on Programming Language Design and Implementation, pages 183–193, June 1997.

Gang Chen and Michael D. Smith. "Global Instruction Scheduling in Machine SUIF," Newsletter of the IEEE Technical Committee on Computer Architecture, pages 37-39, June 1997.

Aaron Brown, Dan Chian, Nishat Mehta, Yannis Papaefstathiou, Josh Simer, Trevor Blackwell, Michael D. Smith, and Woodward Yang. "Using MML to Simulate Multiple Dual-Ported SRAMs: Parallel Routing Lookups in an ATM Switch Controller," Proceedings of the Workshop on Mixing Logic and DRAM: Chips that Compute and Remember, held in conjunction with the 24th Annual International Symposium on Computer Architecture (ISCA), June 1997. See http://iram.cs.berkeley.edu/isca97-workshop/.

Gang Chen and Michael D. Smith. "Global Instruction Scheduling in Machine SUIF," Proceedings of the Workshop on Interaction between Compilers and Computer Architectures, held in conjunction with the Third International Symposium on High-Performance Computer Architecture (HPCA-3), February 1997.

Nicolas Gloy, Cliff Young, J. Bradley Chen, and Michael D. Smith. "An Analysis of Dynamic Branch Prediction Schemes on System Workloads," Proceedings of the 23rd Annual International Symposium on Computer Architecture, pages 12–21, May 1996.

Mark Horowitz, Margaret Martonosi, Todd C. Mowry, and Michael D. Smith. "Informing Memory Operations: Providing Memory Performance Feedback in Modern Processors," Proceedings of the 23rd Annual International Symposium on Computer Architecture, pages 260–270, May 1996.

J. Bradley Chen, Yasuhiro Endo, Kee Chan, David Mazieres, Antonio Dias, Margo Seltzer, and Michael D. Smith. "The Measured Performance of Personal Computer Operating Systems," ACM Transactions on Computer Systems, 14(1):3–40, February 1996.

Margo Seltzer, Chris Small, and Michael D. Smith. "Symbiotic Systems Software: Fast Operating Systems for Fast Applications," Proceedings of the Workshop on Compiler Support for System Software, Tucson, AZ, February 1996.

Michael D. Smith. "Extending SUIF for Machine-dependent Optimizations," Proceedings of the First SUIF Compiler Workshop, Stanford, CA, pages 14–25, January 1996.

Cliff Young and Michael D. Smith. "Branch Instrumentation in SUIF," Proceedings of the First SUIF Compiler Workshop, Stanford, CA, pages 139–145, January 1996.

Kee Chan, J. Bradley Chen, Yasuhiro Endo, David Mazieres, Antonio Dias, Margo Seltzer, and Michael D. Smith. "The Impact of Operating System Structure on Personal Computer Performance," Proceedings of the 15th ACM Symposium on Operating Systems Principles, pages 299–313, December 1995.

Nicolas Gloy, Michael D. Smith, and Cliff Young. "Performance Issues in Correlated Branch Prediction Schemes," Proceedings of the 28th Annual IEEE/ACM International Symposium on Microarchitecture, pages 3–14, November 1995.

Cliff Young, Nick Gloy, and Michael D. Smith. "A Comparative Analysis of Schemes for Correlated Branch Prediction," Proceedings of the 22nd Annual International Symposium on Computer Architecture, pages 276–286, June 1995.

Rahul Razdan and Michael D. Smith. "A High-Performance Microarchitecture with Hardware-Programmable Functional Units," Proceedings of the 27th Annual IEEE/ACM International Symposium on Microarchitecture, pages 172–180, November 1994. Inducted into the TCFPGA Hall of Fame (2019).

T. Blackwell, K. Chan, K. Chang, T. Charuhas, B. Karp, H.T. Kung, D. Lin, R. Morris, M. Seltzer, M. Smith, C.Young, O. Bahgat, M. Chaar, A. Chapman, G. Depelteau, K. Grimble, S. Huang, P. Hung, M. Kemp, I. Mahna, J. McLaughlin, T. Ng, J. Vincent, and J. Watchor. "An Experimental Flow Controlled Multicast ATM Switch," Proceedings of the First Annual Conf. on Telecommunications R&D in Massachusetts, 6:33–38, October 1994.

Cliff Young and Michael D. Smith. "Improving the Accuracy of Static Branch Prediction Using Branch Correlation," Proceedings of the Sixth International Conference on Architectural Support for Programming Languages and Operating Systems, pages 232–241, October 1994.

Rahul Razdan, Karl Brace, and Michael D. Smith. "PRISC Software Acceleration Techniques," Proceedings of the 1994 IEEE International Conference on Computer Design, pages 145–149, October 1994.

Michael D. Smith, Mark Horowitz, and Monica S. Lam. "Efficient Superscalar Performance Through Boosting," Proceedings of the Fifth International Conference on Architectural Support for Programming Languages and Operating Systems, pages 248–259, October 1992.

Michael D. Smith. "Beyond Claims of Free Transistors and Abundant Instruction-Level Parallelism," Symposium Record of HOT Chips III, Stanford, CA, August 1991.

Michael D. Smith, Monica S. Lam, and Mark A. Horowitz. "Boosting Beyond Static Scheduling in a Superscalar Processor," Proceedings of the 17th Annual International Symposium on Computer Architecture, pages 344–354, May 1990.

Michael D. Smith, Mike Johnson, and Mark Horowitz. "Limits on Multiple Instruction Issue," Proceedings of the Third International Conference on Architectural Support for Programming Languages and Operating Systems, pages 290–302, April 1989.

INVITED PAPERS, SPECIAL-ISSUE MAGAZINES, and BOOK CHAPTERS

Simson Garfinkel and Michael D. Smith. "Data Surveillance," Guest Editors' Introduction, IEEE Security and Privacy, 4(6):15-17, November/December 2006.

Michael D. Smith. "Overcoming the Challenges to Feedback-Directed Optimization," Proceedings of the ACM SIGPLAN Workshop on Dynamic and Adaptive Compilation and Optimization (Dynamo'00), invited paper, Boston, MA, January 18, 2000. Also appears in ACM SIGPLAN Notices, 35(7):1–11, July 2000.

Ruby B. Lee and Michael D. Smith. "Media Processing: A New Design Target," Guest Editors' Introduction, IEEE Micro, 16(4):6–9, August 1996.

Jim Pierce, Michael D. Smith, and Trevor Mudge. "Instrumentation Tools," Fast Simulation of Computer Architectures, edited by T. Conte and C. Gimarc, Kluwer Academic Publishers, Boston, MA, pages 47–86, 1995.

Michael D. Smith. "Architectural Support for Compile-Time Speculation," The Interaction of Compilation Technology and Computer Architecture, edited by David Lilja and Peter Bird, Kluwer Academic Publishers, pages 13–49, 1994.

TECHNICAL REPORTS

Alexandra Fedorova, Margo Seltzer and Michael D. Smith. "Cache-Fair Thread Scheduling for Multicore Processors," Technical Report 17-06, Computer Science Group, Harvard University, Cambridge, MA, November 2006.

Nick Gloy, Zheng Wang, Catherine Zhang, Brad Chen, and Mike Smith. "Profile-Based Optimization with Statistical Profiles," Technical Report 02-97, Center for Research in Computing Technology, Harvard University, Cambridge, MA, April 1997.

J. Bradley Chen, Michael D. Smith, and Brian Bershad. "Morph: A Framework for Platform-Specific Optimization," Technical Report 04-96, Center for Research in Computing Technology, Harvard University, Cambridge, MA, March 1996.

Mark Horowitz, Margaret Martonosi, Todd Mowry, and Michael D. Smith. "Informing Loads: Enabling Software to Observe and React to Memory System Behavior," Technical Report CSL-TR-95-673, Computer Systems Laboratory, Stanford University, Stanford, CA, July 1995.

David Mazieres and Michael D. Smith. "Abstract Execution in a Multi-Tasking Environment" Technical Report 31-94, Center for Research in Computing Technology, Harvard University, Cambridge, MA.

Barbara Grosz, H.T. Kung, Margo Seltzer, Stuart Shieber, and Michael Smith. "Infrastructure for Research towards Ubiquitous Information Systems," Technical Report 04-93, Center for Research in Computing Technology, Harvard University, Cambridge, MA, March 1993.

Michael D. Smith. Support for Speculative Execution in High-Performance Processors. Ph.D. thesis, Stanford University, Department of Electrical Engineering, November 1992. (Stanford University Technical Report CSLTR-93-556, November 1992.)

Michael D. Smith. Tracing with pixie. Technical Report CSL-TR-91-497, Computer Systems Laboratory, Stanford University, Stanford, CA, November 1991.

TUTORIALS AND SPECIAL CLASSES

Michael D. Smith. "Machine SUIF." ACM SIGPLAN 2000 Conference on Programming Language Design and Implementation, Vancouver, Canada, June 17, 2000.

Michael D. Smith. "Machine SUIF." ACM SIGPLAN 1998 Conference on Programming Language Design and Implementation, Montreal, Canada, June 19, 1998.

Monica Lam, Mary Hall, and Michael D. Smith. "Compilers for High-Performance Uniprocessors and Multiprocessors." Western Institute in Computer Science, Stanford University, August 21–25, 1995.

Monica S. Lam and Michael D. Smith. "Instruction Scheduling." ACM SIGPLAN 1992 Conference on Programming Language Design and Implementation, San Francisco, California, June 15, 1992.

Mark Horowitz, Steven Przybylski, and Michael D. Smith. "Recent Trends in Processor Design: Reclimbing the Complexity Curve." Western Institute in Computer Science, Stanford University, August 17–21, 1992 (Retaught August 2–6, 1993).

UNIVERSITY TEACHING

Harvard University. Applied Computation 221: Critical Thinking in Data Science. Spring 2020 (Enrollment: 67; co-taught with Professor Jim Waldo).

Harvard University. Computer Science 61: Systems Programming and Machine Organization. Fall 2019 (Enrollment: 141; co-taught with Professor Eddie Kohler). Also offered concurrently as CSCI E-61 through the Harvard Extension School.

Harvard University. Freshman Seminar 50N: What is the Internet, and What Will It Become? Fall 2016 (Enrollment 13; co-taught with Professor Jim Waldo), Fall 2017 (Enrollment 15; co-taught with Professor Jim Waldo).

Harvard University. Computer Science 50: Introduction to Computer Science I. Fall 2002 (Enrollment: 94), Fall 2003 (111), Fall 2004 (115), Fall 2005 (121), Fall 2006 (132).

Harvard University. Computer Science 105: Privacy and Technology. Spring 2009 (Enrollment 30; co-taught with Professor Jim Waldo).

Harvard University. Computer Science 141: Computing Hardware. Introduction to digital logic design and computer architecture. Fall 1993 (Enrollment: 37), Fall 1994 (31), Fall 1995 (48), Fall 1996 (59), Fall 1997 (84), Fall 1998 (77), Fall 1999 (64), Fall 2000 (58), Fall 2001(45).

Harvard University. Computer Science 146: Computer Architecture and Organization. Introduction to uniprocessor computer architectures. Spring 1993 (Enrollment: 21), Spring 1999 (12).

Harvard University. Computer Science 153: Principles of Programming Language Compilation. Spring 2004 (Enrollment: 18).

Harvard University. Computer Science 199r: Special Topics in Computer Science – Privacy and Technology. Spring 2007 (Enrollment: 35).

Harvard University. Computer Science 245r/246r: Compilers, Computer Architecture and Implementation. Hardware design projects. Co-taught with Woodward Yang. Fall 1996 (Enrollment: 16).

Harvard University. Computer Science 246: Advanced Computer Architecture. A quantitative approach to the design and analysis of computer architectures. Spring 1994 (Enrollment: 25), Spring 1995 (16), Spring 1999 (29).

Harvard University. Computer Science 253: Advanced Principles of Programming Language Compilation. Indepth introduction to scalar and machine-specific optimizations. Spring 1996 (Enrollment: 18), Spring 1998 (7), Spring 2000 (12), Spring 2005 (8).

Harvard University: Computer Science 253r: Virtual Machines. Spring 2003 (Enrollment: 15).

INVITED PRESENTATIONS

Panelist, Symposium on Innovation in Higher Education: Technology, Online Learning and the Future of Higher Education, hosted by Universities UK and Goldman Sachs, London, England, November 29, 2012.

"Practically Secure," Cisco, Distinguished Lecture, San Jose, California, January 28, 2008.

"Practically Secure," Tufts University, Computer Science Colloquium, Medford, Massachusetts, April 2007.

"Building on Phoenix." Microsoft Faculty Summit, Redmond, Washington, July 2005.

"Improving Region Selection in Dynamic Optimization Systems." Invited lecture, Intel, Hudson, Massachusetts, June 2005. Also presented at ATI Research, Marlborough, Massachusetts, September 2005, and at Boston University, Boston, Massachusetts, February 2006.

"Rethinking the Unit of Translation in Dynamic Optimization Systems," IBM Workshop, Hawthorne, New York, March 2005.

"Security in a Practical World." Invited lecture, Harvard Industrial Partnership Conference (HIP), Cambridge, Massachusetts, October 2004.

"DRM Technology III: Futures." Invited lecture, Digital Rights Management Strategies 2004 Conference and Expo, New York, New York, April 2004.

"A Generalized Algorithm for Graph-Coloring Register Allocation," Invited lecture, University of Pittsburgh, Pittsburgh, Pennsylvania, March 2004.

"Machine SUIF." Invited lecture, ST Microelectronics, Cambridge, Massachusetts, December 2000.

"Dynamic Optimizers: An Online Opportunity." Keynote speech at the 2000 International Conference on Parallel Architectures and Compilation Techniques (PACT2000), Philadelphia, Pennsylvania, October 2000. Also presented in the Computer Science Distinguished Lecturer Series, Princeton University, Princeton, New Jersey, October 2000.

"Ephemeral Instrumentation for Lightweight Program Profiling." Invited lecture, University of Washington, Seattle, Washington, March 2000. Also given at Microsoft Research, Redmond, Washington, March 2000.

"Overcoming the Challenges to Feedback-Directed Optimization." Invited lecture at the ACM SIGPLAN Workshop on Dynamic and Adaptive Compilation and Optimization (Dynamo'00), held in conjunction with the 27th Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL), Boston, Massachusetts,

January 2000. Also presented in the Dynamic Languages Seminar, Massachusetts Institute of Technology, Cambridge, Massachusetts, February 2000.

"From Megabytes to Multimedia Chips: How PCs Work and What Hardware Matters." Harvard Neighbors, Cambridge, Massachusetts, September 1999.

"The Deco Project: Exploring Techniques for Dynamic Optimization of Phased Behavior." Intel, Santa Clara, California, August 1999.

"Code Optimization in an Art Deco Style." Laboratory for Experimental Systems Software (LESS) Seminar Series, University of Texas, Austin, Texas, December 1998. Also given at Compaq Corporation, Nashua, New Hampshire, January 1999. Also presented at IBM Research, Yorktown Heights, New York, April 1999.

"(Profile <= Temporal Profile <= Trace) and Machine-SUIF Optimizations." Principles of Computer Systems seminar, Massachusetts Institute of Technology, Cambridge, Massachusetts, October 1997. Also given in the Programming Systems seminar, Carnegie Mellon University, Pittsburgh, Pennsylvania, November 1997. Also presented at Rice University, Houston, Texas, August 1998.

"What is the Right Architecture for IRAM?" Advanced Microarchitecture Seminar Series, Carnegie Mellon University, Pittsburgh, Pennsylvania, November 1997.

"Procedure Placement Using Temporal Ordering Information," Intel, Santa Clara, California, August 1997. Also presented at Digital Equipment's Western Research Laboratory, Palo Alto, California, August 1997.

"Some Thoughts about Machine SUIF." Birds-of-a-Feather session at the ACM SIGPLAN 1997 Conference on Programming Language Design and Implementation, Las Vegas, Nevada, June 1997.

"Code Movement and Code Placement Optimizations in Machine SUIF." University of Wisconsin, Madison, Wisconsin, April 1997.

"Morph: An Environment for Platform-specific Optimization." North Carolina State University, Raleigh, North Carolina, March 1997.

"Developing Optimizations in Machine SUIF." Digital Equipment Corporation, Hudson, MA, February 1997. Also presented at the University of Virginia, Charlottesville, Virginia, March 1997.

"Walking to Freedom." Task Force on the Interaction of Architecture and Compilation Technology for High-Performance Single-Processor Design, organized as part of the 30th annual Hawaii International Conference on System Sciences, Wailea, Maui, Hawaii, January 1997.

"A Compilation Environment and Associated Techniques for Today's Microarchitectures." University of California, Los Angeles, California, August 1996.

"Building Better Branch Prediction Schemes." Digital Equipment Corporation, Hudson, MA, October 1995. Also presented at Intel Corporation, Santa Clara, California, January 1996. Revised version presented at the University of Massachusetts, Amherst, Massachusetts, July 1996.

"Building Better Branch Prediction Schemes." Center for Reliable and High-Performance Computing, University of Illinois, Urbana-Champaign, Illinois, January 1995. Also presented at the Department of Electrical Engineering, Princeton University, Princeton, New Jersey, March 1995. Also presented at AT&T Bell Laboratories, Murray Hill, New Jersey, March 1995.

"A High-Performance Microarchitecture with Hardware-Programmable Functional Units." Synopsys, Mountain View, California, November 1994. Also presented at the Center for Integrated Systems, Stanford University, Stanford, California, November 1994.

"Improving the Accuracy of Static Branch Prediction." Hewlett-Packard Laboratories, Cambridge, Massachusetts, October 1994.

"Hot Chips and Cool Code!" Technical Executive Summaries, USENIX Summer 1994 Technical Conference, Boston, MA, June 1994.

"Beyond Claims of Free Transistors and Abundant Instruction-Level Parallelism." HaL Computer Systems, Inc., Campbell, California, October 1991.

"TORCH Project Overview." MIPS Computer Systems, Inc., Sunnyvale, California, July 1991.

"Speculative Execution and Superscalar Processors." Stanford University Computer Forum, Stanford, California, February 1991.

"Superscalar Processor Design." Digital Equipment Corporation, Marlboro, Massachusetts. June 1990. Also presented at the University of California at Santa Cruz, Santa Cruz, California, November 1990.

"Breaking the CPI Barrier." Fourteenth Annual Asilomar Microcomputer Workshop, Pacific Grove, California, April 1988.

ADVISORY BOARDS AND PROGRAM COMMITTEES

Advisory Council for the Department of Computer Science, Princeton University, July 2015 – June 2023.

Computer Science Advisory Board. University of Virginia, 2005-2006.

Board of Advisors. Veracode, Inc., 2006.

Program Committee. The 2008 International Symposium on Code Generation and Optimization (CGO), March 2007.

Program Committee. The 4th International Symposium on Code Generation and Optimization (CGO), March 2006.

Program Committee. The First ACM/USENIX Conference on Virtual Execution Environments (VEE'05), June 2005.

Program Committee. The 3rd International Symposium on Code Generation and Optimization (CGO), March 2005.

Program Committee. The 3rd Workshop on Managed Runtime Environments (MRE'05). Held at CGO 2005, March 2005.

Program Committee. Workshop on Architectural Support for Security and Anti-Virus (WASSA). Held at ASPLOS-XI, October 2004.

Program Committee. The 2nd Workshop on Managed Runtime Environments (MRE04). Held at CGO 2004, March 2004.

Program Committee. The 1st International Symposium on Code Generation and Optimization (CGO), March 2003.

Program Committee. The 2003 International Symposium on Microarchitecture (MICRO-36), December 2003.

Program Committee. The 33rd Annual Int'l Symposium on Microarchitecture (MICRO-33), November 2000.

Program Committee. The 27th Annual Int'l Symposium on Computer Architecture (ISCA-27), June 2000.

Program Committee. The ACM SIGPLAN 2000 Conference on Programming Language Design and Implementation (PLDI), June 2000.

Program Committee. The 6th Int'l Symp. on High-Performance Computer Architecture (HPCA), January 2000.

Program Committee. Second Workshop on Feedback-Directed Optimization, held in conjunction with the 32th Annual IEEE/ACM International Symposium on Microarchitecture, November 1999.

Program Committee. Workshop on Binary Translation, held in conjunction with the 1999 Conference on Parallel Architectures and Compilation Techniques, October 1999.

Program Committee. The 31st Annual Int'l Symposium on Microarchitecture (MICRO-31), November 1998.

Program Committee. The 30th Annual Int'l Symposium on Microarchitecture (MICRO-30), November 1997.

Program Committee. Second SUIF Compiler Workshop, August 1997.

NSF Workshop on New Challenges and Directions, Washington University, St. Louis, Missouri, August 1, 1997.

Program Committee for the Instruction-Level Parallelism Workshop at the Annual European Conference on Parallel Processing (Euro-Par'96), August 1996.

Program Committee. The 24th Annual Int'l Symposium on Computer Architecture (ISCA-24), June 1997.

Program Committee. The 29th Annual Int'l Symposium on Microarchitecture (MICRO-29), November 1996.

Program Committee. Seventh Int'l Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS-VII), October 1996.

Program Committee. The 23rd Annual Int'l Symposium on Computer Architecture (ISCA-23), May 1996.

Program Committee. First SUIF Compiler Workshop, January 1996.

Program Committee. The 28th Annual Int'l Symposium on Microarchitecture (MICRO-28), November 1995.

ARPA-sponsored National Compiler Infrastructure Workshop, August–September, 1995.

Review Panel. National Science Foundation CISE Research Infrastructure program, January 1995.

Computer Architecture Track Advisory Committee. The 28th Hawaii International Conference on Systems Sciences (HICSS-28), January 1995.

Program Committee. The 27th Annual Int'l Symposium on Microarchitecture (MICRO-27), December 1994.

Architectures and Algorithms Track Program Committee. The 1994 IEEE International Conference on Computer Design (ICCD-94), October 1994.

Program Committee. The 26th Annual Int'l Symposium on Microarchitecture (MICRO-26), December 1993.

COMMUNITY SERVICE

Co-host, Global Education Conference 2015, co-sponsored by the Faculty of Arts and Sciences at Harvard and Goldman Sachs, June 18-19, 2015, Cambridge, Massachusetts.

Co-host, Global Education Conference 2014, co-sponsored by the Faculty of Arts and Sciences at Harvard and Goldman Sachs, June 18-19, 2014, Cambridge, Massachusetts.

Chair of Executive Committee for International Symposium on Code Generation and Optimization (CGO) 2007-2010.

Member of Executive Committee for International Symposium on Code Generation and Optimization (CGO) 2002-2010.

Program Committee Chair, 2nd International Symposium on Code Generation and Optimization (CGO), March 2004.

Committee of Examiners, GRE Computer Science Exam. Educational Testing Service, 2000–2002.

Program Chair, 3rd Workshop on Feedback-Directed and Dynamic Optimization, held in conjunction with the 33rd Annual International Symposium on Microarchitecture (MICRO-33), November 2000.

Program Vice Chair, "Massive Parallelism for the Masses," organized as part of the 7th Symposium on the Frontiers of Massively Parallel Computation, February 1999.

Chair of the 3rd Annual Harvard Industrial Partnership in Information Technology Workshop, October 1998.

Co-chair of the Workshop on "Mixing Logic and DRAM: Chips that Compute and Remember," organized as part of the 24th Annual Int'l Symposium on Computer Architecture (ISCA-24), June 1997.

Tutorial/Workshop Chair, 24th Annual Int'l Symposium on Computer Architecture (ISCA-24), June 1997.

Co-guest editor for IEEE Micro magazine special issue on "Media Processing" (August 1996).

RESEARCH FUNDING

Grants from DARPA, NSF, AMD, Compaq, Digital Equipment, Google, IBM, Microsoft, and Intel. Software and equipment donations from AMD, Digital Equipment, Hewlett-Packard, Intel, and Microsoft.

ADVISED PH.D. DISSERTATIONS

Vijay Janapa Reddi, "Software-Assisted Hardware Reliability: Enabling Aggressive Timing Speculation Using Run-Time Feedback from Hardware and Software," March 2010.

Kathleen Durant, "Sentiment Drift and Its Effect on the Classification of Web Log Posts," May 2008.

Rachel Greenstadt. "Improving Privacy in Distributed Constraint Optimization," May 2007.

David J. Malan. "Rapid Detection of Botnets through Collaborative Networks of Peers," May 2007.

Kim Hazelwood Cettei. “Code Cache management in Dynamic Optimization Systems,” May 2004.

Stuart E. Schechter. “Computer Security Strength & Risk: A Quantitative Approach,” May 2004.

Zheng Wang. “Progressive Profiling: A Methodology Based on Profile Propagation and Selective Profile Collection,” October 2001.

Gang Chen. “Effective Instruction Scheduling with Limited Registers,” January 2001.

Nikolas Gloy. “Code Placement using Temporal Profile Information,” September 1998.

R. Clifford Young. “Path-based Compilation,” January 1998.

Rahul Razdan. “PRISC: Programmable Reduced Instruction Set Computers,” May 1994.

UNDERGRADUATE SENIOR THESES/PROJECTS

Robert R. McGrath. “Privacy and Security in Second Generation Web Applications,” Senior thesis in Computer Science, 2007.

Blase Ur. “Privacy in Social Networking: A Usability Study of Privacy Interfaces for Facebook,” Senior thesis in Computer Science, 2007.

David Hiniker. “Improving Region Selection in Dynamic Optimization Systems,” Senior thesis in Computer Science, 2005. Winner of a Harvard University Thomas T. Hoopes prize.

Frederic H. Behr, Jr. “Documented Data Dispersal,” Senior thesis in Computer Science, 2003.

Martha Mercaldi. “Using Exceptions to Obstruct Analysis of Control Flow Structures,” Senior thesis in Computer Science, 2002.

Eric Feigin. “A Case for Automatic Run-Time Code Optimization,” Senior thesis in Computer Science, 1999. Winner of a Harvard University Thomas T. Hoopes prize.

Ebo Bentil. “Portable Tactile Display for Two-Dimensional Textbook Graphics,” Senior project in Engineering Sciences, 1999. Winner of the ES-100 Best Presentation award.

Omri Traub. “Quality and Speed in Linear-scan Register Allocation,” Senior thesis in Computer Science, 1998. Honorable mention in Harvard’s Thomas T. Hoopes prize competition. Winner in the annual ACM Student Research Contest, undergraduate division.

Tony DeWitt. “The Effectiveness of Predicated Execution using the Hyperblock,” Senior thesis in Computer Science, 1996.

David Mazieres. “Abstract Execution in a Multi-Tasking Environment,” Senior thesis in Computer Science, 1994.

HONORS

W.E.B. Du Bois Medal, Harvard University, 2020.

Phi Beta Kappa Prize for Excellence in Teaching, Harvard University, 1999.

Joseph R. Levenson Memorial Teaching Award Nominee, Harvard University, 1999 and 2007.

National Science Foundation Young Investigator (1994).

Primary inventor on U.S. and foreign patents.

Honeywell Quarterly Engineering Achievement Award.

Member of Tau Beta Pi Society.

Fellow in the Center for Integrated System’s Fellow-Mentor-Advisor Program.

PROFESSIONAL ORGANIZATIONS

Association for Computing Machinery.

The Institute of Electrical and Electronics Engineers, Inc. – Senior Member.