Rastislav Bodik

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RESEARCH INTERESTS

Programming systems: program synthesis, parallelizing web browsers, language design, static and dynamic program analysis, mining software artifacts, virtual machines, performance analysis, hardware support for program analysis and compilation.

POSITIONS

Professor — **July 2012 – present**
Computer Science, University of California, Berkeley

Vice Chair for Graduate Matters — **July 2009 – June 2011**
Computer Science, University of California, Berkeley

Associate Professor — **July 2007 – June 2012**
Computer Science, University of California, Berkeley

Assistant Professor — **August 2002 – July 2007**
Computer Science, University of California, Berkeley

Academic Visitor — **August 2002 – December 2006**
IBM T.J. Watson Research Center, Hawthorne, NY

Assistant Professor — **November 1999 – July 2002**
Computer Sciences, University of Wisconsin–Madison

AWARDS

- **Outstanding Advisor**, CS Graduate Student Association, UC Berkeley — **2011**
- **IEEE MICRO Top Pics from Computer Architecture Conferences** — **2004**, **2007**
- **Best Paper Award, PLDI 2005** — **2005**
- **Hellman Family Faculty Fund Award**, UC Berkeley — **2005**
- **HPC Software Challenge (Honorable Mention), Supercomputing** — **2004**
- **Okawa Research Grant** — **2004**
- Paper *Complete Removal of Redundant Expressions* selected for **20 Years of PLDI** — **2002**
- **Students' Choice Professor of the Year Award**, UW, Computer Sciences — **2001**
- **NSF CAREER** — **2001**
- **ACM SIGPLAN Doctoral Dissertation Award** — **2001**
- **Carolyn Rosner Excellent Educator Award**, UW, Computer Sciences — **2000**
- **IBM Faculty Partnership Award** — **2000** to **2002**
- **Taulbee Award for Teaching and Research Excellence**, Un. of Pittsburgh, C.S. — **1996**
- **Mellon Predoctoral Fellowship**, University of Pittsburgh — **1994** and **1995**

EDUCATION

PhD in Computer Science — **1999**

University of Pittsburgh, Pittsburgh, PA

Diploma in Computer Engineering **1992**
Technical University, Kosice, Slovakia

PUBLICATIONS

Journal papers

- Rastislav Bodik, Rajiv Gupta, "Array Data-Flow Analysis for Load-Store Optimizations in Fine-Grain Architectures," *International Journal of Parallel Programming*, Vol. 24, No. 6, pages 481–512, 1996.
- Brian A. Fields, Rastislav Bodik, Mark D. Hill, Chris J. Newburn, "Interaction Cost and Shotgun Profiling," ACM Transactions on Architecture and Code Optimization (TACO) Volume 1, Issue 3, pages 272–304, September 2004.
- Brian A. Fields, Rastislav Bodik, Mark D. Hill, and Chris J. Newburn, "Interaction Cost: For when event counts just don't add up," IEEE Micro Special Issue: Micro's Top Picks from Microarchitecture Conferences, Volume 24, Issue 6, Pages 57–61, November–December 2004.
- Min Xu, Rastislav Bodik, and Mark D. Hill, "A hardware memory race recorder for deterministic replay," (MICRO Top Picks), IEEE Micro, vol. 27, no. 1, pp. 48–55, Jan. 2007.
- Krste Asanovic, Rastislav Bodík, *et al*, "A View of the Parallel Computing Landscape", Communications of the ACM, vol. 52, no. 10, pp. 56–67, 2009.

Refereed conference and workshop papers

LCPC '95 Rastislav Bodik, Rajiv Gupta, "Array Data-Flow Analysis for Load-Store Optimizations in Superscalar Architectures," *The Eighth Annual Workshop on Languages and Compilers for Parallel Computing*, Columbus, August 1995.

► Invited for special submission to *International Journal of Parallel Programming.*

SPDP '95 Rajiv Gupta, Rastislav Bodik, "Adaptive Loop Transformations for Scientific Programs," *IEEE Symposium on Parallel and Distributed Processing*, San Antonio, October 1995.

PLDI '97 Rastislav Bodik, Rajiv Gupta, "Partial Dead Code Elimination using Slicing Transformations," *ACM SIGPLAN Conference on Programming Language Design and Implementation*, Las Vegas, June 1997.

PLDI '97 Rastislav Bodik, Rajiv Gupta, Mary Lou Soffa, "Interprocedural Conditional Branch Elimination," *ACM SIGPLAN Conference on Programming Language Design and Implementation*, Las Vegas, June 1997.

FSE '97 Rastislav Bodik, Rajiv Gupta, Mary Lou Soffa, "Refining Data Flow Information using Infeasible Paths," *ACM SIGSOFT Symposium on Foundations of Software Engineering*, Zurich, Switzerland, September 1997.

POPL '98 Rastislav Bodik, Sadun Anik, "Path-Sensitive Value-Flow Analysis," *ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*, San Diego, January 1998.

PLDI '98 Rastislav Bodik, Rajiv Gupta, Mary Lou Soffa, "Complete Removal of Redundant Expressions," *ACM SIGPLAN Conference on Programming Language Design and Implementation*, Montreal, June 1998.

CC '99 Rajiv Gupta, Rastislav Bodik, "Register-Pressure-Sensitive Redundancy Elimination," to appear in *International Conference on Compiler Construction*, Amsterdam, Netherlands, March 1999.

PLDI '99 Rastislav Bodik, Rajiv Gupta, Mary Lou Soffa, "Load-Reuse Analysis: Design and Evaluation," *ACM SIGPLAN Conference on Programming Language Design and Implementation*, Atlanta, May 1999.

PLDI '00 Rastislav Bodik, Rajiv Gupta, Vivek Sarkar, "ABCD: Eliminating Array Bounds Checks on Demand," *ACM SIGPLAN Conference on Programming Language Design and Implementation*, pp. 321–333, Vancouver, June 2000.

FDDO '00 Subbu Sastry, Rastislav Bodik, James E. Smith, "Characterizing Coarse-Grain Reuse of Computations," *Proc. 3rd ACM Workshop on Feedback-Directed and Dynamic Optimization (FDDO-3)*, pp. 1-10, December 2000.

ISCA '01 Brian Fields, Shai Rubin, Rastislav Bodik, "Focusing Processor Policies via Critical-Path Prediction," *ACM SIGARCH 28th Annual International Symposium on Computer Architecture*, Göteborg, Sweden, June 2001.

ISCA '01 Subbu Sastry, Rastislav Bodik, James E. Smith, "Rapid Profiling via Stratified Sampling," *ACM SIGARCH 28th Annual International Symposium on Computer Architecture*, Göteborg, Sweden, June 2001.

POPL '02 Glenn Ammons, Rastislav Bodik, James R. Larus, "Mining Specifications," *ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*, Portland, OR, January 2002.

POPL '02 Shai Rubin, Trishul Chilimbi, Rastislav Bodik, "An Efficient Profile-Analysis Framework for Data Layout Optimizations," *ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*, Portland, OR, January 2002.

ISCA '02 Brian Fields, Rastislav Bodik, Mark D. Hill, "Slack: Maximizing Performance under Technological Constraints," in *ACM SIGARCH 29th Annual International Symposium on Computer Architecture*, Anchorage, Alaska, May 2002.

PLDI '03 Glenn Ammons, David Mandelin, Rastislav Bodik, James Larus, "Debugging Temporal Specifications with Concept Analysis," in *ACM SIGPLAN Conference on Programming Language Design and Implementation*, San Diego, CA, June 2003.

ISCA '03 Min Xu, Rastislav Bodik, Mark D. Hill, "A "Flight Data Recorder" for Enabling Full-system Multiprocessor Deterministic Replay," in *ACM SIGARCH 30th Annual International Symposium on Computer Architecture*, San Diego, CA, June 2003.

MICRO '03 Brian Fields, Rastislav Bodik, Mark D. Hill, C.J. Newburn, "Microarchitectural bottleneck analysis using interaction costs," in *The 36th Annual IEEE/ACM International Symposium on Microarchitecture*, San Diego, CA, December 2003.

- Selected to *2004 IEEE Top Pics from Computer Architecture Conferences*.
- Invited to a special issue of the *ACM TACO Journal*.

P-PHEC '04 Armando Solar-Lezama, Rastislav Bodik, "Templating Transformations for Bitstream Programs," in *HPCA Workshop on Productivity and Performance in High-End Computing (P-PHEC 2004)*, Madrid, Spain, February, 2004.

PLDI '05 David Mandelin, Lin Xu, Rastislav Bodik, Doug Kimelman, "Mining Jungloids: Helping to Navigate the API Jungle," in *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'05)*, Chicago, IL, June 2005.

PLDI '05 Armando Solar-Lezama, Rodric Rabbah, Rastislav Bodik, Kemal Ebcioglu, "Programming by Sketching for Bitstreaming Programs," in *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'05)*, Chicago, IL, June 2005.

- *Best Paper Award.*

PLDI '05 Min Xu, Rastislav Bodik, Mark D. Hill, "Serializability Violation Detector for Shared-Memory Server Programs," in *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'05)*, Chicago, IL, June 2005.

OOPSLA '05 AJ Shankar, S.Subramanya Sastry, Rastislav Bodik, James E. Smith "Runtime Specialization With Optimistic Heap Analysis," 20th Annual ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA '05) San Diego, CA, October 2005.

OOPSLA '05 Manu Sridharan, Denis Gopan, Lexin Shan, Rastislav Bodik, "Demand-Driven Points-to Analysis for Java," in 20th Annual ACM Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA '05) San Diego, CA, October 2005.

PLDI '06 Manu Sridharan and Rastislav Bodik, "Refinement-Based Context-Sensitive Points-To Analysis for Java" in *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI 2006)*, Ottawa, Canada, June 10–16, 2006.

ASPLOS '06 Armando Solar-Lezama, Liviu Tancau, Rastislav Bodik, Vijay Saraswat and Sanjit Seshia, "Combinatorial Sketching for Finite Programs," in *12th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2006)*, San Jose, CA, October 2006.

ASPLOS '06 Min Xu, Rastislav Bodik and Mark D. Hill, "A Regulated Transitive Reduction for Longer Memory Race Recording," in *12th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2006)*, San Jose, CA, October 2006.

PLDI '07 AJ Shankar, Rastislav Bodik, "Ditto: Automatic Incrementalization of Data Structure Invariant Checks," in *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'07)*, San Diego, CA, June 2007.

PLDI '07 Armando Solar-Lezama, Gilad Arnold, Liviu Tancau, Rastislav Bodik, Vijay Saraswat, Sanjit Seshia, "Sketching Stencils," in *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'07)*, San Diego, CA, June 2007.

PLDI '07 Manu Sridharan, Rastislav Bodik, Stephen Fink, "Thin Slicing," in *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'07)*, San Diego, CA, June 2007.

PPoPP '08 Satish Chandra, Vijay Saraswat, Vivek Sarkar, Rastislav Bodik, "Type Inference for Locality Analysis of Distributed Data Structures," in *ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming*, Salt Lake City, Utah, February 2008.

PLDI '08 Armando Solar-Lezama, Chris Jones, Rastislav Bodik, "Sketching Concurrent Data Structures," in *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI'08)*, Tuscon, AZ, June 2008.

OOPSLA '08 Ajeet Shankar, Matthew Arnold, Rastislav Bodik, "Jolt: Lightweight Dynamic Analysis and Removal of Object Churn," in *ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA 2008)*, Nashville, TN, October 2008.

HotPar '09 Chris Jones, Rose Liu, Leo Meyerovich, Krste Asanovic, Rastislav Bodik, "Parallelizing the Web Browser," in *First USENIX Workshop on Hot Topics in Parallelism (HotPar)*, Berkeley, CA, March 2009.

PLDI FIT '09 Ras Bodik, Justin Bonnar and Doug Kimelman, "Productivity programming for future computers," Fun Ideas and Thoughts, at PLDI 2009.

EC^2 '09 James Ide, Rastislav Bodik, and Doug Kimelman, "Concurrency Concerns in Rich Internet Applications," Exploiting Concurrency Efficiently and Correctly, a CAV workshop, 2009

DAC WACI '09 Rastislav Bodik, Andreas Raabe, "Synthesizing Hardware from Sketches," Wild and Crazy Ideas, DAC, 2009.

POPL '10 Rastislav Bodik, Satish Chandra, Joel Galenson, Doug Kimelman, Nicholas Tung, Shaon Barman, Casey Rodarmor, "Programming with angelic nondeterminism," Symposium on Principles of Programming Languages (POPL), 2010, pp. 339–352, 2010.

WWW '10 Leo Meyerovich and Rastislav Bodik, "Fast and Parallel Webpage Layout," International World Wide Web Conferences (WWW), 2010.

ICFP '10 Gilad Arnold, Johannes Holzlz, Ali Sinan Koksal, Rastislav Bodik, and Mooly Sagiv, "Specifying and Verifying Sparse Matrix Codes," The 15th ACM SIGPLAN International Conference on Functional Programming (ICFP), 2010.

FSE '10 Shay Litvak, Nurit Dor, Rastislav Bodik, Noam Rinetzky, and Mooly Sagiv, "Field-Sensitive Program Dependence Analysis," Eighteenth International Symposium on the Foundations of Software Engineering (FSE), 2010

ICSE '11 Satish Chandra, Emina Torlak, Shaon Barman, and Rastislav Bodik, "Angelic Debugging," International Conference on Software Engineering (ICSE), 2011.

OOPSLA '11 Yewen Pu, Saurabh Srivastava, Rastislav Bodik, "Synthesis of First-Order Dynamic Programming Algorithms," 26th Annual ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications, SPLASH/OOPSLA 2011 (OOPSLA), Oct 2011.

Other refereed publications

- Rastislav Bodik, Rajiv Gupta, Mary Lou Soffa, "A retrospective on 'Complete Removal of Redundant Expressions'," in *Best of PLDI: 20 Years of the ACM SIGPLAN Conference on Programming Language Design and Implementation 1979-1999, A Selection*, ACM SIGPLAN Notices Volume 39 , Issue 4 (April 2004)
- Armando Solar-Lezama, Rastislav Bodik, Kemal Ebcioglu, Rodric Rabbah, Vivek Sarkar, "Highly Productive Collaborations in Bit-Streaming Applications," presented as part of HPC Software Challenge, SC2004, Pittsburgh, PA, 2004
  - ▶ *Honorable Mention.*
- Rastislav Bodik, "Small Languages in an Undergraduate PL/Compiler Course," First SIGPLAN Workshop on Undergraduate Programming Language Curricula, to appear in SIGPLAN Notices.

Non-refereed publications

- K. Asanovic, R. Bodik, B. C. Catanzaro, J. J. Gebis, P. Husbands, K. Keutzer, D. A. Patterson, W. L. Plishker, J. Shalf, S. W. Williams, and K. A. Yelick, "The Landscape of Parallel Computing Research: A View from Berkeley," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2006-183, Dec. 2006.
- M. Sridharan, S. J. Fink, and R. Bodik, "Thin Slicing," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2006-184, Dec. 2006.
- K. Asanovic, R. Bodik, J. Demmel, T. Keaveny, K. Keutzer, J. D. Kubiatowicz, E. A. Lee, N. Morgan, G. Necula, D. A. Patterson, K. Sen, J. Wawrzynek, D. Wessel, and K. A. Yelick, "The Parallel Computing Laboratory at U.C. Berkeley: A Research Agenda Based on the Berkeley View," EECS Department, University of California, Berkeley, Tech. Rep. UCB/EECS-2008-23, March 2008.

GRANTS

- PI, *Live Tiles from User Mockups*, Nokia, research donation, 2011-2012, $60,000.
- PI, *Layout and Scripting Language for Parallel Clients*, Google, research donation, 2011-2012, $70,000.
- co-Investigator, *Universal Parallel Computing Research Center (Phase II)*, Microsoft/Intel, research contract, 2011-2013, $4,000,000.
- co-PI, *CIFellows Project: Postdoc Fellowship for Saurabh Srivastava*, Computing Research Association, CIF-B-106, 2010-2012.
- PI, *Software Synthesis for High Productivity Exascale Computing*, DOE, DE-SC0005136, 2010-2013, $683,344.
- co-Investigator, *Universal Parallel Computing Research Center*, University of California, Discovery, 2010-2011.
- PI, *Web Page Layout and Animations for Handheld Devices*, Nokia, Inc 20093333, 2009-2011, $156,000.
- mentor, *Parallel Web Browser Algorithms*, Qualcomm, Innovation Fellowship for Seth Fowler and Leo Meyerovich, 2009-2010, $100,000.

- co-PI, *Universal Parallel Computing Research Center*, Samsung, ParLab industrial affiliate donation, 2009-2011, $300,000.
- co-PI, *Universal Parallel Computing Research Center*, Nokia, ParLab industrial affiliate donation, 2009-2011, $300,000.
- PI, *SHF: Small: Programming Abstractions for Algorithmic Software Synthesis*, NSF, CCF-0916351, 2009-2012, $500,000.
- co-Investigator, *Universal Parallel Computing Research Center*, University of California, Discovery, 2008-2010, $2,397,390.
- co-Investigator, *Universal Parallel Computing Research Center*, Microsoft/Intel, research contract, 2008-2011, $6,000,000.
- PI, *Programming by Sketching*, University of California, MICRO, 2007-2008, $83,375.
- PI, *Programming by Sketching*, IBM, COR, 2006-2008, $500,000.
- PI, *SoD-TEAM: Programming by Sketching*, NSF, CCF-0613997, 2006-2008, $200,000.
- PI, *Programming by Sketching*, University of California, MICRO, 2006-2007, $112,350.
- PI, *CyberTrust-ISG: Implementing Provably CorrectHigh-Performance Ciphers with Sketching*, NSF, CNS-0524815, 2005-2008, $450,000.
- PI, Microsoft, donation, 2005-2006, $37,000.
- PI, Intel, research grant, 2005-2006, $20,000.
- PI, IBM, Eclipse Innovation Grant, 2005-2006.
- co-PI, *Tools for Securing Software Infrastructure*, University of California, MICRO, 2004-2005.
- PI, Intel, research grant, 2004-2005.
- PI, *Prospector*, IBM, Eclipse Innovation Grant, 2004-2005.
- PI, *PERCS (Productive, Easy-to-use, Reliable Computing System)*, DARPA, HPCS Phase II, 2003-2005, $240,000.
- Co-PI, *ITR: Language-Based Software Security*, NSF, CNS-0326577, 2003-2007, $900,000.
- Co-PI, *Tools for Securing Software Infrastructure*, University of California, MICRO, 2003-2004, $53,543.
- PI, Intel, research grant, 2003-2004.
- PI, IBM, Faculty Partnership Award, 2003-2004.
- Co-PI, *Exploiting the Critical Path in the Design*, NSF, CCR-0105721, 2001-2004, $422,507.
- Co-PI, *NGS: Wisconsin DOVE: Distributed Optimizing Virtual Environment*, NSF, EIA-0103670, 2001-2004, $596,740.
- PI, *CAREER: Scalable Compiler Optimizations for Modern Software*, NSF, CCR-0093275, 2000-2005, $300,000.

RECENT SEMINARS

- invited tutorial (with Emina Torlak), *Synthesizing Programs with Constraint Solvers*, CAV 2012, Berkeley, CA, July 2012.
- invited talk, *Synthesis for Systems Biology*, SYNT 2012: The First Workshop on Synthesis (at CAV 2012), Berkeley, CA, July 2012.

- workshop presentation, *Parallel Client Programmable by Everyone*, Computer Systems Design for the 21st Century (ASPLOS 2011 PC Workshop), Rochester, NY, October 2011.
- seminar, *Algorithmic Program Synthesis*, Microsoft Research, Cambridge, UK, September 2011.
- invited talk, *Automatic Programming Revisited, Part I: Puzzles and Oracles*, ARTIST Summer School Europe 2011, Aix-les-Bains, France, September 2011.
- invited talk, *, Part II: Synthesizer Algorithms*, ARTIST Summer School Europe 2011, Aix-les-Bains, France, September 2011.
- invited talk, *Sketching: Partial Programs, Inductive Synthesis and Constraint Solvers*, 4th International Workshop on Approaches and Applications of Inductive Programming, Odense, Denmark, July 2011.
- invited panel presentation, *Hack Your Language!*, Teaching Programming Language Design and Implementation ... What? to Whom? How? (PLDI 2011 panel), San Jose, CA, June 2011.
- workshop presentation, *Parallel Programming with Inductive Synthesis*, 3rd USENIX Workshop on Hot Topics in Parallelism (HotPar), Berkeley, CA, May 2011.
- invited talk, *Ideas for Applying Synthesis to High-Performance Computing*, DARPA ISAT Workshop, Chicago, IL, May 2011.
- invited talk, *Automatic Programming Revisited*, Triangle Computer Science Distinguished Lecturer Series, NCSU, March 2011.
- invited talk, *Algorithmic Program Synthesis with Partial Programs*, CIS Colloquium 2009, University of Pennsylvania, PA, October 2009.
- invited talk, *Synthesizing Programs from Programmer Insight*, Future of Design of Software Development (NPUC 2009), Almaden, CA, July 2009.
- invited talk, *Algorithmic Program Synthesis with Partial Programs and Decision Procedures*, The 16th International Static Analysis Symposium (SAS 2009), Los Angeles, CA, August 2009.
- invited lectures, *Algorithmic Program Synthesis*, Oregon Summer School in Programming Languages, Eugene, OR, July 2009.
- invited talk, *Program Synthesis by Sketching*, 7th meeting of IFIP Working Group 2.11, NASA Ames, April 2009.
- invited lecture, *Program Synthesis by Sketching*, Computer Science Lecture Series, Rice University, October 2008.
- invited talk, *Exploiting Parallelism in the Web Browser*, Browser Performance Workshop, Santa Clara, CA, August 2008.
- seminar, *Recent Results in Sketching Synthesis*, IBM Watson PL Seminar, Hawthorne, NY, August 2008.
- invited talk, *Sketching Concurrent Data Structures*, UW/MSR Workshop on The Concurrency Challenge, Blaine, WA, August 2008.
- invited talk, *Browsing Web 3.0 on 3.0 Watts: Why Browsers Will Be Parallel and Im- plications for Education*, The 3rd Workshop on Software Tools for MultiCore Systems (STMCS08), Boston, MA, April 2008.

- plenary talk, *Program Synthesis by Sketching*, The 4th Annual Thomas J. Watson P=ac2 Conference, Yorktown Heights, NY, April 2008.
- panel presentation, *Why Do We Still Have Bugs?*, The 4th Annual Thomas J. Watson P=ac2 Conference, Yorktown Heights, NY, March 2008.
- invited talk, *Browsing Web 3.0 on 3.0 Watts: Why Browsers Will Be Parallel*, Mozilla Corp Engineering All-Hands Week, Menlo Park, CA, January 2008.
- invited talk, *Program Synthesis by Sketching*, ACM SIGPLAN 2008 Workshop on Partial Evaluation and Program Manipulation (PEPM08), San Francisco, CA, January 2008.
- invited talk, *Programming by Sketching*, Computer Science Colloquium, Cornell University, October 2007.
- invited talk, *Programming by Sketching*, New England Programming Languages and Systems Symposium (NEPLS), Portland, Maine, October 2006.
- invited talk, *Two Techniques for Programming by Sketching*, Computer Science Colloquium, Brown University, October 2006.

STUDENTS, GRADUATED

- Subbu Sastry, *PhD* (University of Wisconsin), 2003, *Techniques for Transparent Program Specialization In Dynamic Optimizers*, co-advised with Jim Smith.
- Glenn Ammons, *PhD* (University of Wisconsin), 2003, *Strauss: A Specification Miner*, co-advised with Jim Larus, now at IBM Research.
- Min Xu, *PhD* (University of Wisconsin), 2006, *Race Recording for Multithreaded Deterministic Replay Using Multiprocessor Hardware*, co-advised with Mark Hill, now at SeaMicro.
- Brian Fields, *PhD*, 2006, *Using Criticality to Attack Performance Bottlenecks*, winner of NSF Fellowship, now at Webroot Software.
- Manu Sridharan, *PhD*, 2007, *Refinement-Based Program Analysis Tools*, winner of Microsoft Fellowship, NDSEG Fellowship, now at IBM Research.
- A.J. Shankar, *PhD*, 2007, *Complex Program Transformations Via Simple Online Dynamic Analyses*, winner of NDSEG Fellowship, now at modista, EasyESI.
- David Mandelin, *MS*, 2007, *Prospector*, now at Mozilla.
- Armando Solar-Lezama, *PhD*, 2008, *Program Synthesis by Sketching*, winner of IBM Fellowship, now at MIT.
- Liviu Tancau, *MS*, 2007, *JavaSketch*, now at Google.
- Lexin Shan, *MS*, 2009, *SMT-based Sketch Synthesizer*.
- Chris Jones, *BS*, 2008, *Parallel lexical analysis*, winner of 2008 CRA Honorable Mention, now at Mozilla.
- Justin Bonnar, *BS*, 2009, *Attribute grammar scheduler*, now at Amazon.
- Seth Fowler, *MS*, 2011, *Divide-and-Conquer Parsing for Parallelism and Laziness*, winner of Qualcomm Fellowship, now at Qualcomm Research Center.
- Adam Jiang, *MS*, 2011, *Attribute grammar scheduler for parallel layout engines*, now at Oracle.
- James Ide, *BS*, 2011, *A declarative layout and animation language*, now at Facebook.

- Apollo Ellis, *BS*, 2008, *Parallel raytracing*, now at UT Austin (grad student); Intel.
- Gilad Arnold, *PhD*, 2011, *Data-Parallel Language for Correct and Efficient Sparse Matrix Codes*, now at Google.
- Sagar Jain, *MS*, 2011, *Program Synthesis of Parallel Scans*, now at Google.
- Nicholas Tung, *BS*, 2012, *Synthesis for GPUs*.
- Evan Pu, *BS*, 2011, *Synthesis of dynamic programming algorithms*, co-advised with Saurabh Srivastava, now at MIT (grad student).

STUDENTS, CURRENT

- Leo Meyerovich, *PhD*, expected graduation: 2013, topic: *Parallel layout engines and expressing layout semantics*, winner of NSF Fellowship, Qualcomm Fellowship, CRA Honorable Mention.
- Shaon Barman, *PhD*, expected graduation: 2014, topic: *Programming by demonstration for web browser users*.
- Joel Galenson, *PhD*, expected graduation: 2014, topic: *Programming by demonstration*, co-advised with Koushik Sen.
- Thibaud Hottelier, *PhD*, expected graduation: 2014, topic: *Mud: declarative layout language with a synthesis-based compiler*.
- Ali Sinan Koksal, *PhD*, expected graduation: 2017, topic: *Synthesis for Systems Biology*.
- Edward Lu, *MS*, expected graduation: 2013, topic: *rendering for the browser project*.
- Sarah Chasins, *PhD*, expected graduation: 2018, topic: *looking*, winner of NSF Graduate Research Fellowship and an ARCS Fellowship for Graduate Study.
- Phitchaya (Mangpo) Phothilimthana, *PhD*, expected graduation: 2018, topic: *compilation and synthesis for low-power devices*.
- Matt Torok, *BS*, expected graduation: 2013, topic: *Superconductor: Data visualization layout on GPU*.
- Eric Atkinson, *BS*, expected graduation: 2015, topic: *Specifying CSS in attribute grammars*.

PROFESSIONAL ACTIVITIES

Organizer/Co-organizer

- ASPLOS 2013, Program Chair, March 2013, Houston, TX.
- Dagstuhl Seminar on Software Synthesis, co-organizer, April 2012, Dagstuhl, Germany.
- Summer School on Software Synthesis, co-organizer, Aug 2011, Dagstuhl, Germany.
- STTT Journal Special Issue on Synthesis, guest co-editor, Jan 2011.
- ASPLOS Special Session on Ideas and Perspectives, chair, Mar 2011, Newport Beach, California.
- OSQ Retreat, co-organizer, May 2011, Santa Cruz, CA.
- Prospective Grad Student Visit Day, co-organizer, Mar 2011, Berkeley, CA.
- OSQ Retreat, co-organizer, May 2010, Santa Cruz, CA.

- Prospective Grad Students Visit Day, co-organizer, Mar 2010, Berkeley, CA.
- Tapia Diversity in Computing Visit to Computer Science at UC Berkeley, co-organizer, Apr 2011, Berkeley, CA.
- Dagstuhl Seminar on Software Synthesis, co-organizer, Dec 2009, Dagstuhl, Germany.
- ASPLOS, Workshop Chair, 2006.
- Compiler Construction (CC), Program Chair, 2005.
- Student Research Forum at ACM SIGPLAN PLDI, Chair, 2005.
- PACT, Publications Chair, 2005.
- Steering Committee of European Joint Conferences on Theory and Practice of Software (ETAPS), Member, 2004.
- Wild and Crazy Ideas Session at ASPLOS, Co-chair, 2002.
- Student Research Forum at PLDI, Co-chair, 2002.
- The First ACM OM: Workshop on Optimizing Middleware and Distributed Software, Program Chair, June 2001.

Member of Program Committee

- CC 2012
- ASPLOS 2012
- 2011 SIGPLAN Dissertation Award Committee
- PLASTIC 2011
- GPCE 2011
- PLDI 2010
- PLDI 2009, External Committee Member
- IEEE Micro Top Pics 2008
- PLDI 2009 FIT Session
- 17th International Conference on Parallel Architectures and Compilation Techniques (PACT08)
- Steering Committee for the PL Curricula Workshop, May 2008.
- 13th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS'08)
- International Symposium on Code Generation and Optimization (CGO07)
- 16th International Conference on Compiler Construction (CC07)
- 6th International ACM SIGPLAN Conference on Generative Programming and Component Engineering (GPCE07)
- ACM SIGPLAN Workshop on Partial Evaluation and Program Manipulation (PEPM07)
- eclipse Technology eXchange (eTX) Workshop at OOPSLA 2005.
- Symposium on Principles of Programming Languages (POPL) 2005.
- Code Generation and Optimization (CGO) 2004.

- International Conference on Compiler Construction 2004.
- Symposium on Principles of Programming Languages (POPL) 2003.
- International Conference on Supercomputing (ICS), June 2002.
- International Conference on Compiler Construction (CC-2002), April 2002.
- Third ACM Workshop on Feedback-Directed and Dynamic Optimization (FDDO-3), December, 2001.
- International Conference on Parallel Architectures and Compilation Techniques (PACT), September, 2001.
- 5th Annual Workshop on Interaction between Compilers and Computer Architectures (INTERACT-5), January, 2001.

Member of Review Panel

- NSF Proposal Review Panel, March 2010.
- NSF Proposal Review Panel, 2008.
- NSF Proposal Review Panel, December 2004.
- NSF Proposal Review Panel, March 2003.
- NSF Proposal Review Panel, 2001.