eric schkufza

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Research

Applying the tools of large-scale data analysis and machine learning to the design of optimizing compilers. My work focuses on the analysis and optimization of low-level machine code in the absence of its original source.

Education

2008–2015	**Ph.D., Computer Science**, *Stanford University*, Stanford CA.
	Stochastic Program Optimization for x86_64 Binaries – Advised by Prof. Alex Aiken
2006–2008	**M.S., Computer Science**, *Stanford University*, Stanford CA.
	Artificial Intelligence Concentration
2001–2005	**B.S.E., Computer Science**, *The University of Michigan*, Ann Arbor MI.
2001–2005	**B.S.E., Computer Engineering**, *The University of Michigan*, Ann Arbor MI.

Professional Experience

2015–Present	**Researcher**, *VMware Research Group*, Palo Alto CA.
	Bringing innovation in computer science in core areas of importance to VMware
2012–2015	**Expert Consultant**, *Feinberg Day Alberti & Thompson LLP*, Palo Alto CA.
	Litigating intellectual property law
2010–2011	**Research Intern**, *Microsoft Research*, Redmond WA.
	Improving the throughput of the Bing search engine
2005	**Junior Software Developer**, *Bloomberg, L.P.*, New York NY.
	Implementing search tools for financial news feeds

Teaching Experience

2012	**Course Assistant**, *CS243 Program Analysis and Optimizations*.
	Taught by Prof. Monica Lam, Stanford University
2011	**Course Assistant**, *CS242 Programming Languages*.
	Taught by Prof. John Mitchell, Stanford University
2008	**Course Assistant**, *CS227b General Game Playing*.
	Taught by Prof. Michael Genesereth, Stanford University
2005	**Teaching Assistant**, *EECS270 Introduction to Logic Design*.
	Taught by Prof. Igor Markov, The University of Michigan

Advising Experience

2016   **Berkeley R. Churchill**, *VMware Intern*.
Automatically identifying third-party components in x86_64 binaries

Professional Service

2017   **Program Committee**, *World Wide Web Conference*.
WWW 2017

2016   **Program Committee**, *Asia Pacific Workshop on Systems*.
ApSys 2016

2008   **Co-Chair**, *AAAI General Game Playing Competition*.
AAAI 2008

2007   **Co-Chair**, *AAAI General Game Playing Competition*.
AAAI 2007

Honors and Appointments

2013–2014   **Guest Critic**, *Architecture Studio 4*.
Department of Art and Architecture, University of San Francisco

2013   **Recipient**, *Ole Agesen Graduate Fellowship*.
VMware

2011–2012   **DJ**, *90.1 FM KZSU Stanford*.
Stanford University

2008   **Recipient**, *Computer Science Graduate Fellowship*.
Stanford University

2004–2005   **Officer**, *Eta Kappa Nu, Electrical Engineering Honor Society*.
The University of Michigan

2004–2005   **Recipient**, *Angell Hall Academic Scholarship Award*.
The University of Michigan

2001–2005   **Recipient**, *Dean's List and University Honors*.
The University of Michigan

2001–2005   **Recipient**, *Richard Earhart Academic Scholarship*.
The University of Michigan

Patents

2016   **US 9355470 B2**, *Method and System for Interactive Layout*.
Paul Merrell, Vladlen Koltun, Eric Schkufza, Maneesh Agrawala

Case Work

2013–2014   **Code Review**, *Case No. 1:13cv740-AJT/TRJ*.
Intellectual Ventures I LLC and Intellectual Ventures II LLC, Plaintiffs, v. Capital One Financial Corporation, Capital One Bank (USA), N.A., and Capital One, N.A., Defendants

2013–2014   **Code Review**, *Case No. 13-cv-61358-rosenbaum/hunt*.
Intellectual Ventures I LLC and Intellectual Ventures II LLC, Plaintiffs, v. Motorola Mobility LLC, Defendant

2012–2013 **Code Review**, *Case No. 1:11-cv-908-SLR*.
Intellectual Ventures I LLC and Intellectual Ventures II LLC, Plaintiffs v. Motorola
Mobility, Inc., Defendant

Refereed Journal Publications

Eric Schkufza, Rahul Sharma, and Alex Aiken. Stochastic program optimization. *Communications of the ACM Research Highlights*, February 2016.

Refereed Conference Publications

Stefan Heule, Eric Schkufza, Rahul Sharma, and Alex Aiken. Stratified synthesis: Automatically learning the x86-64 instruction set. *PLDI*, 2016.

Rahul Sharma, Eric Schkufza, Berkeley R. Churchill, and Alex Aiken. Conditionally correct superoptimization. *OOPSLA*, 2015.

Eric Schkufza, Rahul Sharma, and Alex Aiken. Stochastic optimization of floating-point programs with tunable precision. *PLDI*, 2014.

Rahul Sharma, Eric Schkufza, Berkeley R. Churchill, and Alex Aiken. Data-driven equivalence checking. *OOPSLA*, 2013.

Eric Schkufza, Rahul Sharma, and Alex Aiken. Stochastic superoptimization. *ASPLOS*, 2013.

Paul Merrell, Eric Schkufza, Zeyang Li, Maneesh Agrawala, and Vladlen Koltun. Interactive furniture layout using interior design guidelines. *SIGGRAPH*, 2011.

Michael Bauer, John Clark, Eric Schkufza, and Alex Aiken. Programming the memory hierarchy revisited: supporting irregular parallelism in sequoia. *PPOPP*, 2011.

Paul Merrell, Eric Schkufza, and Vladlen Koltun. Computer-generated residential building layouts. *SIGGRAPH Asia*, 2010.

Eric Schkufza, Nathaniel Love, and Michael R. Genesereth. Propositional automata and cell automata: Representational frameworks for discrete dynamic systems. *AI*, 2008.

Refereed Workshop Publications

Tal Wagner, Eric Schkufza, and Udi Wieder. A sampling-based approach to accelerating queries in log management systems. *SPLASH*, 2016.

Himanshu Chauhan, Irina Calciu, Vijay Chidambaram, Eric Schkufza, Onur Mutlu, and Pratap Subrahmanyam. NVMOVE: helping programmers move to byte-based persistence. *INFLOW@OSDI*, 2016.

Eric Schkufza and Alex Aiken. Optimizing out overcomputation. *APPROX*, 2014.

Evan Cox, Eric Schkufza, Ryan Madsen, and Michael R. Genesereth. Factoring general games using propositional automata. *GIGA*, 2009.

Eric Schkufza. Decomposition of games for efficient reasoning. *SARA*, 2007.

Technical Reports

Eric Schkufza. *Stochastic Program Optimization for x86_64 Binaries*. PhD thesis, Stanford University, 2015.

Eric Schkufza, Rahul Sharma, Berkeley R. Churchill, and Alex Aiken. Quantitative binary synthesis. *Stanford University*, 2014.

Eric Schkufza, Trishul Chilimbi, and James Larus. Visage: A domain-specific language for document feature extraction. *Microsoft Research*, 2011.

Nat Love, Tim Hinrichs, David Haley, Eric Schkufza, and Michael R. Genesereth. Game description language specification. *Stanford University*, 2008.