

Scott E. Friedman

Curriculum Vita

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I am a Computer Science Ph.D. candidate, researching topics in Artificial Intelligence at Northwestern University. My research interests include qualitative reasoning, analogical reasoning, cognitive architectures, belief revision, cognitive modeling, virtual robotics, and human-level AI. After finishing my Ph.D., I plan to continue researching Artificial Intelligence at a research university or an industrial research laboratory. My additional expertise and teaching interests include cognitive science, project management, web development, and object-oriented software engineering.

Education

Ph.D. in Computer Science Northwestern University Qualitative Reasoning Group, Cognitive Systems Division Thesis: Computational Conceptual Change: An Explanation-Based Approach	2007-Current
Master of Science in Computer Science Washington University in St. Louis Distributed Object Computing Group Thesis: Dusty caches to save memory traffic	2003-2005
Bachelor of Science in Computer Science Washington University in St. Louis Minors: Philosophy, Writing	1999-2003

Research

Northwestern University Qualitative Reasoning Group Graduate Research Assistant, advised by Kenneth D. Forbus	2007-Current
Washington University Distributed Object Computing Group Graduate Research Assistant, advised by Ron K. Cytron	2003-2005
Undergraduate Research Assistant, advised by Ron K. Cytron	2000-2003

Industrial Software Development

General Mills, Inc. Programmer/Analyst Programmer/Analyst intern	2005-2007 2004
Ultradata Systems, Inc. Embedded systems software designer	2000

Teaching

Northwestern University

Teaching Assistant for *CogSci 211: Introduction to Cognitive Modeling* 2008, 2009

Washington University School of Engineering

Teaching Assistant for *CS342: Object-Oriented Software Development* 2001

Flynn Park Elementary School

Volunteer Reading Tutor & Counselor 1999-2002

Publications

- Theses & Tech reports **Scott Friedman.** (expected 2012). Computational conceptual change: An explanation-based approach. Doctoral dissertation, Northwestern University, Department of Electrical Engineering and Computer Science, Evanston, Illinois.
- Scott Friedman.** (2005). Dusty caches to save memory traffic. Master's thesis, Washington University in St. Louis, Department of Computer Science, St. Louis, Missouri.
- Refereed Conferences & Journals **Scott E. Friedman, Kenneth D. Forbus.** (2011). Repairing Incorrect Knowledge with Model Formulation and Metareasoning. *Proceedings of the 22nd International Joint Conference on Artificial Intelligence.* Barcelona, Spain.
- Jason L. M. Taylor, Scott E. Friedman, Kenneth Forbus, Micah Goldwater, Dedre Gentner.** (2011). Modeling structural priming in sentence production via analogical processes. *Proceedings of the 33rd Annual Conference of the Cognitive Science Society.*
- Scott E. Friedman, Kenneth D. Forbus.** (2010). An integrated systems approach to explanation-based conceptual change. *Proceedings of the 24th AAAI Conference on Artificial Intelligence.* Atlanta, GA.
- Sara Friedman, Benjamin Sayers, Matthew Lazio, Scott Friedman, Michael Gisondi.** (2010). Curriculum Design of a Case-based Knowledge Transition Shift for Emergency Medicine Residents. *Academic Emergency Medicine, 17(s2):* 42-48.
- Matthew McLure, Scott E. Friedman, Kenneth D. Forbus.** (2010). Learning concepts from sketches via analogical generalization and near-misses. *Proceedings of the 32nd Annual Conference of the Cognitive Science Society (CogSci).* Portland, OR.
- Scott E. Friedman, Jason Taylor, Kenneth D. Forbus.** (2009). Learning Naive Physics Models by Analogical Generalization. *Proceedings of the 2nd International Analogy Conference.* Sofia, Bulgaria.
- Jana Zujovic, Lisa Gandy, Scott Friedman, Bryan Pardo, Thrasylvoulos Pappas.** (2009). Classifying Paintings by Artistic Genre: An Analysis of Features & Classifiers. *Proceedings of Multimedia Signal Processing (MMSP).* Rio de Janeiro, Brazil.
- Scott E. Friedman, Kenneth D. Forbus.** (2009). Learning Naive Physics Models & Misconceptions. *Proceedings of the 31st Annual Conference of the Cognitive Science Society (CogSci).* Amsterdam, Netherlands.

Scott E. Friedman, Kenneth D. Forbus. (2008). Learning Causal Models via Progressive Alignment & Qualitative Modeling: A Simulation. *Proceedings of the 30th Annual Conference of the Cognitive Science Society (CogSci)*. Washington, D.C.

Shobana Padmanabhan, Phillip Jones, David Schuehler, Scott Friedman, Praveen Krishnamurthy, Huakai Zhang, Roger Chamberlain, Ron Cytron, Jason Fritts, John Lockwood. (2005). Extracting and improving microarchitecture performance on reconfigurable architectures. *International Journal of Parallel Programming*, 33(2-3): 115-136.

Refereed
Workshops
& Symposia

Scott E. Friedman, Kenneth D. Forbus, Bruce Sherin. (2011). Constructing and revising commonsense science explanations: A metareasoning approach. *Proceedings of the AAAI Fall Symposium on Advances in Cognitive Systems*.

Scott E. Friedman, Kenneth D. Forbus, Bruce Sherin. (2011). How do the seasons change? Creating & revising explanations via model formulation & metareasoning. *Proceedings of the 25th International Workshop on Qualitative Reasoning*. Barcelona, Spain.

Matthew McLure, Scott E. Friedman, Andrew Lovett, Kenneth D. Forbus. (2011). Edge-cycles: A qualitative sketch representation to support recognition. *Proceedings of the 25th International Workshop on Qualitative Reasoning*. Barcelona, Spain.

Matthew McLure, Scott E. Friedman, Kenneth D. Forbus. (2010). Combining progressive alignment and near-misses to learn concepts from sketches. *Proceedings of the 24th International Workshop on Qualitative Reasoning*. Portland, OR.

Scott E. Friedman, Kenneth D. Forbus, Jason Taylor. (2009). Learning and Reasoning with Qualitative Models of Physical Behavior. *Proceedings of the 23rd International Workshop on Qualitative Reasoning*. Ljubljana, Slovenia.

Scott E. Friedman, Kenneth D. Forbus. (2008). Learning Qualitative Causal Models via Generalization & Quantity Analysis. *Proceedings of the 22nd International Workshop on Qualitative Reasoning*. Boulder, CO.

Matthew Klenk, Scott E. Friedman, Kenneth D. Forbus. (2008). Learning Modeling Abstractions via Generalization. *Proceedings of the 22nd International Workshop on Qualitative Reasoning*. Boulder, CO.

Richard Hough, Phillip Jones, Scott Friedman, Roger Chamberlain, Jason Fritts, John Lockwood, Ron Cytron. (2006). Cycle-Accurate Microarchitecture Performance Evaluation. *IEEE Workshop on Introspective Architecture (WISA)*.

Scott Friedman, Praveen Krishnamurthy, Roger D. Chamberlain, Ron Cytron, Jason Fritts. (2005). Dusty Caches for Reference Counting Garbage Collection. *MEDEA Workshop*.

Scott Friedman, John Lockwood, Ron Cytron, Roger Chamberlain, Jason Fritts. (2005). Dusty Caches for Reducing Reference-Counting Memory Traffic. *IEEE Workshop: Architecture Research using FPGA Platforms (WARFP), HPCA11 Conference*.

David Schuehler, Benjamin Brodie, Roger Chamberlain, Ron Cytron, Scott Friedman, Jason Fritts, Phillip Jones, Praveen Krishnamurthy, John Lockwood, Shobana Padmanabhan, Huakai Zhang. (2004). Microarchitecture Optimization for Embedded Systems presentation. *High Performance Embedded Computing (HPEC8) Workshop*.

Shobana Padmanabhan, Phillip Jones, David Schuehler, Scott Friedman, Praveen Krishnamurthy, Huakai Zhang, Roger Chamberlain, Ron Cytron, Jason Fritts, John Lockwood. (2004). Extracting and Improving Microarchitecture Performance on Reconfigurable Architectures. *CASES CTCEs Workshop*.

Scott Friedman, Nicholas Leidenfrost, Benjamin Brodie, Ron Cytron. (2001). Hashtables for Embedded and Real-Time Systems. *IEEE Real-Time Embedded Systems Workshop*. London, England.

Academic Awards, Service, & Societies

Invited Talk for NU Undergraduate CogSci Club: "Computational Conceptual Change"	2011
Northwestern University Graduate Certificate in Cognitive Science	2011
Northwestern University Advanced Cognitive Science Research Fellowship	2010-2011
Northwestern University EECS Graduate Student Committee	2009-2011
Cognitive Science Society	2008-2011
Association for the Advancement of Artificial Intelligence	2008-2011
Reviewer, <i>Annual Conference of the Cognitive Science Community</i>	2008-2010
Reviewer, <i>Informatica</i>	2010
NSF CogSci Travel Award	2009
Northwestern University John Piros Fellowship	2007-2008
Association for Computing Machinery (ACM)	2001-2005
Washington University Cum Laude Honors	2003
National Merit Scholarship	1999-2003
Washington University Leadership through Service	1999-2000

Coursework & Proficiencies

Graduate Coursework	Knowledge Representation, Machine Learning, Mobile Robotics, Motion Planning, Computer Graphics, Project Management, Cognitive Science
Programming Languages	Lisp, C/C++, Java, Microsoft .NET, PHP, DHTML/Javascript/HTML5, XML/XSL/DOM, SQL, Actionscript