Scott E. Friedman

C u r r i c u l u m V i t a s f r i e d m a n @ s i f t . n e t

My research interests fall broadly within Artificial Intelligence, including qualitative reasoning, analogical reasoning, automated planning, cognitive architectures, belief revision, and cognitive modeling. My additional expertise and teaching interests include cognitive science, project management, web development, and object-oriented software engineering.

Education

Ph.D. in Computer Science 2007-2012
Northwestern University
Qualitative Reasoning Group, Cognitive Systems Division
Thesis: Computational Conceptual Change: An Explanation-Based Approach

Master of Science in Computer Science 2003-2005
Washington University in St. Louis
Distributed Object Computing Group
Thesis: Dusty caches to save memory traffic

Bachelor of Science in Computer Science 1999-2003
Washington University in St. Louis
Minors: Philosophy, Writing

Research

Smart Information Flow Technologies (SIFT)
Research Scientist 2012-Current

Northwestern University Qualitative Reasoning Group
Graduate Research Assistant, advised by Kenneth D. Forbus 2007-2012

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 2005-2007
Programmer/Analyst intern 2004

Ultradata Systems, Inc.
Software designer for embedded systems products 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 & Technical Reports

Scott Friedman. (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. Thesis for Master of Science in Computer Science, Washington University in St. Louis, MO.

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*.

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.

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.

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, Thrasyvoulos Pappas. (2009). Classifying Paintings by Artistic Genre: An Analysis of Features & Classifiers. *Proceedings of Multimedia Signal Processing (MMSP)*. Rio de Janiero, 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.

Workshops & Symposia

Scott E. Friedman, David Barbella, Kenneth D. Forbus. (2012). Repairing Qualitative Domain Knowledge with Cross-Domain Analogy. *Proceedings of the 26th International Workshop on Qualitative Reasoning. Los Angeles, CA.*

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

Prize Committee, 2nd Deep Knowledge Representation Competition	2012
Program Committee, 26th International Workshop on Qualitative Reasoning	2012
Reviewer, *Artificial Intelligence*	2012
Northwestern University Advanced Cognitive Science Fellowship	2010-2011
Northwestern University EECS Graduate Student Committee	2009-2011
Cognitive Science Society	2008-2012
Association for the Advancement of Artificial Intelligence	2008-2012
Reviewer, *Annual Conference of the Cognitive Science Community*	2008-2010
Reviewer, *Informatica*	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