# Morteza Dehghani


CONTACT INFORMATION

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RESEARCH INTERESTS

**Integrated Approaches to Decision Making** :

*-Moral Decision Making*

*-Decision Making under Uncertainty*

**Cognitive Modeling** :

*-Cognitive Approaches to Machine Learning*

*-Cognitive Modeling of Cultural Dynamics*

**Causal and Counterfactual Reasoning** :

*-Counterfactual Decision Making and Belief Propagation*

*-Hybrid Approaches to Causal Reasoning*

EDUCATION

**Northwestern University**, Evanston, IL, USA

Ph.D. Candidate, Computer Science, 2005-2010(expected)
- Advisor: Prof. Kenneth D. Forbus

**Northwestern University**, Evanston, IL, USA

MS, Computer Science, 2005-2008
- Advisor: Prof. Kenneth D. Forbus

**University of California, Los Angeles**, Los Angeles, CA, USA

M.S., Computer Science, 2003-2005
- Advisor: Prof. Adnan Darwiche

**University of California, Los Angeles**, Los Angeles, CA, USA

B.S., Computer Science, Technical Minor in Mathematics, 2001-2003

**Irvine Valley College**, Irvine, CA, USA

1999-2001

CONFERENCE AND WORKSHOP PAPERS:

**C1** Dehghani, M., Tomai, E., Forbus, K., Iliev, R., Klenk, M. (2008). MoralDM: A Computational Modal of Moral Decision-Making. Abstract accepted at the 2008 meeting of Society of Judgment and Decision Making (SJDM). Chicago, IL.

**C2** Dehghani, M., Tomai, E., Forbus, K., Klenk, M. (2008). Order of Magnitude Reasoning in Modeling Moral Decision-Making. In Proceedings of 22nd International Workshop on Qualitative Reasoning (QR). Boulder, CO.

**C3** Lockwood, K., Lovett, A., Forbus, K., Usher, J., Dehghani, M. (2008). Automatic Interpretation of Depiction Conventions in Sketched Diagrams. In Proceedings of 5th Eurographics Workshop on Sketch-Based Interfaces and Modeling (SBIM). Annecy, France.

**C4** Lovett, A., Dehghani, M., Forbus, K. (2008). Building and Comparing Qualitative Description of Three-Dimensional Design Sketches. In Proceedings of 22nd International Workshop on Qualitative Reasoning (QR). Boulder, CO.

**C5** Lockwood, K., Lovett, A., Forbus, K., Dehghani, M., Usher, J. (2008). The Theory of Depiction for Sketches of Physical Systems. In Proceedings of 22nd International Workshop on Qualitative Reasoning (QR). Boulder, CO.

**C6** Dehghani, M., Tomai, E., Forbus, K., Klenk, M. (2008). An Integrated Reasoning Approach to Moral Decision-Making. In Proceedings of the Twenty-Third AAAI Conference on Artificial Intelligence (AAAI). Chicago, IL.

**C7** Dehghani, M., Tomai, E., Forbus, K., Iliev, R., Klenk, M. (2008). MoralDM: A Computational Modal of Moral Decision-Making. In Proceedings of the 30th Annual Conference of the Cognitive Science Society (CogSci). Washington, D.C.

**C8** Dehghani, M., Iliev, R., Kaufmann, S. (2008). Causal Explanations and Backward Counterfactuals. Member Abstract. In Proceedings of the 30th Annual Conference of the Cognitive Science Society (CogSci). Washington, D.C.

**C9** Lovett, A., Lockwood, K., Dehghani, M., Forbus, K. (2007). Modeling Human-Like Rates of Learning via Analogical Generalization. Proceedings of Analogies: Integrating Multiple Cognitive Abilities. Nashville, TN.

**C10** Dehghani, M., Iliev, R., Kaufmann, S. (2007). Effects of Fact Mutability in the Interpretation of Counterfactuals. Proceedings of the 29th Annual Conference of the Cognitive Science Society (CogSci). Nashville, TN.

**C11** Dehghani, M., Unsworth, S., Lovett, A., Forbus, K. (2007). Capturing and Categorizing Mental Models of Food Webs using QCM. 21st International Workshop on Qualitative Reasoning (QR). Aberystwyth, U.K.

**C12** Forbus, K., Lockwood, K., Tomai, E., Dehghani, M., Czyz, J. (2007) Machine Reading as a Cognitive Science Research Instrument. AAAI Spring Symposium on Machine Reading. Stanford University, CA.

**C13** Lovett, A., Dehghani, M., Forbus, K. (2007). Constructing Spatial Representations of Variable Detail for Sketch Recognition. AAAI Spring Symposium on Control Mechanisms for Spatial Knowledge Processing in Cognitive / Intelligent Systems. Stanford University, CA.

**C14** Lovett, A., Dehghani, M., Forbus, K. (2007). Incremental Learning of Perceptual Categories for Open-Domain Sketch Recognition. International Joint Conferences on Artificial Intelligence (IJCAI). Hyderabad, India.

**C15** Dehghani, M., Lovett, A. (2006). Efficient Genre Classification using Qualitative Representations. Proceedings of the 7th International Conference on Music Information Retrieval (ISMIR). Victoria, Canada.

**C16** Lovett, A., Dehghani, M., Forbus, K. (2006). Efficient Learning of Qualitative Descriptions for Sketch Recognition. 20th International Workshop on Qualitative Reasoning (QR). Hanover, NH.

### Non-Refereed Presentations

**P1** Dehghani, M., Unsworth, S., Lovett, A., Forbus, K. (2007). Capturing and Categorizing Mental Models of Food Webs using QCM. Presented at a MURI Workshop on "Computational Models for Belief Revision, Group Decisions, and Cultural Shifts". Northwestern University, IL.

**P2** Dehghani, M., Forbus, K. (2006). VModel Pro: A Concept Map System for Capturing Human Mental Models. 20th International Workshop on Qualitative Reasoning. Hanover, NH.

**P3** Dehghani, M., Forbus, K. (2006). VModel Pro: A Concept Map System for Capturing Human Mental Models. Presented at a MURI Workshop on "Computational Models for Belief Revision, Group Decisions, and Cultural shifts". MIT, MA.

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## Professional Experience

### Reviewer

- 30th Annual Conference of the Cognitive Science Society (CogSci08)
- 29th Annual Conference of the Cognitive Science Society (CogSci07)

### Memberships

- Association for the Advancement of Artificial Intelligence (AAAI)
- Cognitive Science Society
- Society for Judgment and Decision Making

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## Research Experience

**Qualitative Reasoning Group, Northwestern University**, Evanston, IL
**(http://www.qrg.northwestern.edu)**
*Graduate Research Assistant* **2005 - present**
*Computational Models for Belief Revision, Group Decisions, and Cultural shifts* (Culture).

**Automated Reasoning group, UCLA**, Los Angeles, CA
**(http://reasoning.cs.ucla.edu)**
*Graduate Research Assistant* **2004 - 2005**
*Framework for Recursive Conditioning on Embedded Systems for Inference and Reasoning on Bayesian Networks*

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## Teaching Experience

**Northwestern University**, Evanston, IL
*Teaching Assistant* **Fall 2007**
Cognitive Modeling

**University of California Los Angeles**, Los Angeles, CA
*Teaching Associate* **Summer 2004**
Operating Systems

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## Work Experience

**Symantec Co., Inc** , Santa Monica, CA
*Software Developer* **2003-2005**
Developing Tools for Automated Testing

**Pooyan Music Conservatory**, Irvine, CA
*Classical Guitar Instructor* **2001-2002**

**Item Software USA, Inc.**, Irvine, CA
*Programmer* **1998-1999**

**Best Buy Co., Inc**, Mission Viejo, CA
*Lead PC Technician* **1998-2001**

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## Projects

*Computational Models for Belief Revision, Group Decisions, and Cultural Shifts*
This project is part of a Multi University Research Initiative with the aim of modeling the interaction of beliefs, attitudes and sacred values with a culture . For this project my work focuses on: 1. Constructing computational models of reasoning and decision making that take cultural factors into account. 2. Designing a modeling platform for researchers to use in characterizing similarities and differences in causal and moral reasoning across cultures.

*Bayesian Reasoning on Embedded Systems*
The goal of this project was to have an embedded system, using probabilistic reasoning, answer queries and also act based on the Bayesian Network stored in its memory and evidence and interventions perceived from the environment. This project was my Master's project.

*Automated Mock Translation Tool, for Localization Testing*
This project was developed while working at Symantec. In summary, this tools searches through many gigabytes of data/code and looks for translatable text. After finding these texts, it would partially translate these texts to German, Italian or Japanese.

*Automated User Interface Testing, for Symantec Enterprise Security Architecture (SESA)*
The purpose of this project was to perform automated UI testing, by mocking steps a typical user would follow to execute a procedure.

*Distributed Auctions for File Sharing*
Implemented in C, a distributed auctioning program for sharing/selling files over a network.

*Operating System Scheduler, using English Auctions*
Implemented an O.S. Scheduler using game-theory techniques.

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## Honors and Awards

Murphy Fellowship 2005-2006
Member of Golden Key International Honor Society
Member of Phi Sigma Theta and Phi Theta Kappa Honor Societies
Dean's List in 2000,2001,2002

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## References

**Professor Kenneth D. Forbus**
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**Professor Douglas L. Medin**
Psychology Department
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**Professor Stefan Kaufmann**
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**Professor Dedre Gentner**
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**Professor Bryan Pardo**
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**Professor Janet Afary**
Department of History
Purdue University
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