Natalia Hernandez Gardiol

MIT CSAIL
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Academic Background

Doctor of Philosophy in Electrical Engineering and Computer Science ..... December 2007
Massachusetts Institute of Technology, Cambridge, MA
Thesis title: Relational Envelope-based Planning

Master of Science in Electrical Engineering and Computer Science ..... February 2003
Massachusetts Institute of Technology, Cambridge, MA
Thesis title: Applying Probabilistic Rules to Relational Worlds

Bachelor of Science in Computer Science and Engineering, *with high honors* ... December 1999
Michigan State University, East Lansing, MI

Research Interests

Decision-making under uncertainty, Probabilistic models, Reinforcement learning, Planning.

Professional Experience

Visiting Professor/Postdoctoral Associate ..... March 2010 - July 2010
Universitat Pompeu Fabra, Barcelona, Spain
Artificial Intelligence Group, directed by Hector Geffner
Teaching Responsibilities: Automata Theory and Introduction to Databases

Assistant Vice President ..... May 2008 - February 2010
State Street Associates, Cambridge, MA
Research Topics: statistical models of trading data, financial indicator development and production

Postdoctoral Associate ..... January 2008 - May 2008
Massachusetts Institute of Technology
LIS Lab, directed by Leslie Pack Kaelbling and Tomas Lozano-Perez
Research Topics: Bayesian models, statistical learning methods

Research Assistant ..... September 2000 - December 2007
Massachusetts Institute of Technology
LIS Lab, directed by Leslie Pack Kaelbling
Research Topics: probabilistic models for sequential decision-making, planning with abstractions, reinforcement learning with partial observability

Research Assistant ..... September 1998 - June 2000
Michigan State University
Autonomous Agents Lab, directed by Sridhar Mahadevan
Research topics: hierarchical reinforcement learning

Engineering Co-operative Education Internship ..... January 1998 - August 1998
IBM Global Services, Southbury Connecticut.
Advisor: Linda Yue.
Projects: Lotus Notes application programming, Perl scripts to assist DNS management

Undergraduate Research Assistant ..... May 1997 - December 1997
Michigan State University
Pattern Recognition and Image Processing Lab, directed by Anil Jain
Research topics: automated finger-print image capture

Undergraduate Research Assistant ..... September 1996 - May 1997
Michigan State University
Genetic Algorithms Lab, directed by Bill Punch
Project: search interface for multiple web search engines

Teaching Experience

Lecturer ..... Spring 2010
Universitat Pompeu Fabra, Barcelona, Spain
Second-year, core requirement: Automata Theory and Formal Languages (Theory of Computation)
Planned theory lectures; helped design homework assignments, recitation problems, and final exam.

Lab Instructor ..... Spring 2010
Universitat Pompeu Fabra, Barcelona, Spain
First-year, core requirement: Introduction to Databases
Designed completely new laboratory sessions to introduce students to the design and implementation of databases for web-applications.

Teaching Assistant ..... Fall 2007
Massachusetts Institute of Technology
Undergraduate-level, core requirement: 6.01, Introduction to EECS.
Assisted with problem set development, offered office hours and classroom support for students on projects ranging from Python coding, to simple circuits and basic robot control.

Teaching Assistant ..... Fall 2002
Massachusetts Institute of Technology
Graduate-level, core elective: 6.827, Techniques in Artificial Intelligence.
Helped prepare problem sets, offered office hours and review sessions.

Papers

Conferences and Symposia

Natalia H. Gardiol and Leslie Pack Kaelbling. "Action-space partitioning for planning". In *National Conference on Artificial Intelligence (AAAI)*. Vancouver, Canada, 2007. **Note: One of top five international conferences for AI/Machine Learning; the others are NIPS, UAI, ICML, and IJCAI. Acceptance rate in 2007: 27.5% (253/921)** .

N. H. Gardiol and L. . Kaelbling. "Computing action equivalences for planning". In *International Conference on Automated Planning and Scheduling, Doctoral Consortium*. Cumbria, UK, 2006. **Note: Leading international conference for planning research.**

Natalia H. Gardiol and Leslie P. Kaelbling. "Envelope-based planning in relational MDPs". In *Advances in Neural Information Processing 16 (NIPS-2003)*. Vancouver, 2004. **Note: Top five international conference for AI/ML. Acceptance rate in 2003: 27.6% (198/717)** .

Sarah J. Finney, Natalia H. Gardiol, Leslie Pack Kaelbling, and Tim Oates. "The thing that we tried didn't work very well: Deictic representation in reinforcement learning". In *18th Int'l Conference on Uncertainty in Artificial Intelligence (UAI-02)*. Edmonton, 2002. **Note: Top five international conference for AI/ML. Acceptance rate in 2002: 34% (66/192)** .

Leslie Pack Kaelbling, Tim Oates, Natalia H. Gardiol, and Sarah J. Finney. "Learning in worlds with objects". In *Working Notes of the AAAI Stanford Spring Symposium on Learning Grounded Representations*. March 2001.

Natalia H. Gardiol and Sridhar Mahadevan. "Hierarchical memory-based reinforcement learning". In *Advances in Neural Information Processing 13 (NIPS-2000)*. Denver, 2001. **Note: Top five international conference for AI/ML. Acceptance rate in 2001: 30%** .

Technical Reports

Natalia H. Gardiol and Leslie Pack Kaelbling. "Adaptive envelope MDPs for relational equivalence-based planning". Technical Report MIT-CSAIL-TR-2008-050, MIT CSAIL, Cambridge, MA, 2008.

Natalia H. Gardiol. *Relational Envelope-based Planning*. Ph.D. thesis, MIT, Cambridge, MA, 2007. MIT-CSAIL-TR-2007-061.

N. H. Gardiol and L. P. Kaelbling. "Computing action equivalences for planning under time constraints". Technical Report MIT-CSAIL-TR-2006-022, MIT CS & AI Lab, Cambridge, MA, 2006.

Natalia H. Gardiol. *Applying Probabilistic Rules To Relational Worlds*. Master's thesis, MIT, Cambridge, MA, 2002.

Sarah J. Finney, Natalia H. Gardiol, Leslie Pack Kaelbling, and Tim Oates. "Learning with deictic representations". Technical Report AIM-2002-006, MIT AI Lab, Cambridge, MA, 2002.

Awards & Fellowships

GE Fund Faculty for the Future Fellowship Spring 2004

National Science Foundation Graduate Research Fellowship 3-Year Fellowship, Fall 2000

Outstanding Undergraduate Research Award Computing Research Association. Dec. 1999

Professorial Assistantship Michigan State University. 2-Year Grant, Spring 1995

Spartan Scholarship Michigan State University. 4-Year Scholarship, Spring 1995

Professional Activities

Journal Reviewing Journal of Artificial Intelligence Research

Conference Reviewing Neural Information Processing Systems conference (NIPS) 2003, 2004; International Joint Conference on Artificial Intelligence (IJCAI) 2003, 2005, 2009; Robotics Science & Systems (RSS) 2005; New England Student Conference on Artificial Intelligence (NESCAI) 2007; Iberamia-08; International Conference on Machine Learning (ICML) 2007, 2008; European Conference on Artificial Intelligence (ECAI) 2010.

Society Memberships Tau Beta Pi, American Association for Artificial Intelligence (AAAI)

Languages

Spanish (native), English (native), French (fluent)

Other Interests

Cambridge Bicycle/Igleheart Frames Cycling Team Dedicated grassroots amateur cycling team competing in Road, Mountain, and Cyclocross disciplines, 2008-2010. Led skills workshops on introduction to bicycle racing as Women's team captain.

MIT Cycling Team Competed in Road, Mountain, Track, and Cyclocross disciplines, 2005 - 2007. Member of Collegiate National Cyclocross Championship team, 2006.

MIT Outing Club Led official Winter skiing, snowshoeing trips and Summer rock-climbing trips. Board of directors member and Skiing chair, 2003-2006.

Wilderness First Aid WFA and Advanced WFA certified, 2003 and 2005.