

# Anna Koop

Curriculum Vitae

Department of Computing Science  
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- Interests**            **Machine Learning and Cognitive Science.** Specifically online learning, reinforcement learning, and model-learning for autonomous artificial agents.
- Education**
- Ph.D. candidate, Computing Science,** University of Alberta            Present  
Advisors: Drs Michael Bowling and Dale Schuurmans
- M.Sc., Computing Science,** University of Alberta            2007  
Departmental Best Thesis Award. Advisor: Dr Richard S. Sutton
- B. Sc., Specialization Computing Science,** University of Alberta            2005  
First-Class Standing
- Teaching**
- Teaching Assistant, Graduate Studies,** Edmonton, AB            2011–present  
*Department of Computing Science, University of Alberta.* Assisting Joerg Sander in the introductory graduate course (CMPUT 603), including grading, supporting students, and developing some assignments and lectures.
- Teaching Assistant, Introductory Python,** Edmonton, AB            2012  
*Department of Computing Science, University of Alberta.* Lab TA for the spring introductory python course (CMPUT 173), including directing labs, grading, review lectures, and developing review exercises.
- Tutor,** Edmonton, AB            2001–2004  
*Academy for Maths and Sciences.* Tutored calculus, applied math, physics, chemistry, english, and language arts for high school, junior high, and middle school students.
- Employment**
- Research Assistant,** Edmonton, AB            2005–2011  
*RL & AI Research Group, University of Alberta.* Developed core ideas in empirical knowledge representation; coded in Matlab, Java, C++, Python and Lisp; coordinated lab activities and volunteer efforts.
- Undergraduate Researcher,** Edmonton, AB            2003–2005  
*Alberta Ingenuity Centre for Machine Learning.* Led the development of Open Pages, a web-based collaboration tool. Work included administration of the server, development of project goals, supervision of another programmer, and programming scripts in Python and Javascript.
- Web Application Developer and System Administrator**            2000–2003  
*Self-employed.* Developed applications for commercial websites using PHP, MySQL, Perl, and Bash. Adminstrated the web server for a small hosting company.

**Awards and Honors****Scholarships**

NSERC PGS-D Scholarship for Ph. D. (3 year)	2008
President's Doctoral Prize of Distinction (3 year)	2008
NSERC CGS-M Scholarship for M. Sc. (1 year)	2006
Walter H. Johns Graduate Fellowship (1 year)	2006
Alberta Ingenuity Studentship (5 year)	2005
iCORE Graduate Student Fellowship (5 year)	2005

**Research****Refereed Conference Publications**

[1] Anna Koop and Elliot A. Ludvig. Predictive Representations as a Computational Model for Mediated Conditioning [Poster]. In *22nd Annual Joseph R. Royce Research Conference*, Edmonton, AB, 2008.

[2] Elliot A. Ludvig and Anna Koop. Learning to Generalize through Predictive Representations: A Computational Model of Mediated Conditioning. In *From Animals to Animals 10: Proceedings of Simulation of Adaptive Behavior (SAB 2008)*, pages 342–351, Osaka, Japan, 2008.

[3] Richard S. Sutton, Anna Koop, and David Silver. On the Role of Tracking in Stationary Environments. In *Proceedings of the 24th International Conference on Machine Learning (ICML 2007)*, pages 878–886, Corvallis, OR, 2007.

[4] Brian Tanner, Vadim Bulitko, Anna Koop, and Cosmin Paduraru. Grounding abstractions in predictive state representations. In *Proceedings of the 20th International Joint Conference on Artificial Intelligence (IJCAI 2007)*, pages 1077–1082, Hyderabad, India, 2007.

[5] Richard S. Sutton, Eddie JR Rafols, and Anna Koop. Temporal abstraction in temporal-difference networks. In *Advances in Neural Information Processing Systems 18 (NIPS 2005)*, Vancouver, BC, 2006.

[6] Doina Precup, Richard S. Sutton, Cosmin Paduraru, Anna Koop, and Satinder P. Singh. Off-Policy Learning with Recognizers. In *Advances in Neural Information Processing Systems 18 (NIPS 2005)*, Vancouver, BC, 2006.

**Unrefereed Publications**

[7] Anna Koop, Leah Hackman, and Richard S. Sutton. Bridging the Implementation Gap: From Sensorimotor Experience to Abstract Conceptual Knowledge [Abstract]. In *Proceedings of the 32nd Annual Conference of the Cognitive Science Society (CogSci 2010)*, page 549, Portland, OR, 2010.

[8] Anna Koop. Investigating Experience: Temporal Coherence and Empirical Knowledge Representation. Master's thesis, University of Alberta, 2008.

[9] Anna Koop, Richard S. Sutton, Mark B. Ring, and David Silver. Making Sense of Learning to Learn: A New Approach to Generalization as Recollection [Poster]. In *2006 Workshop for Women in Machine Learning*, San Diego, CA, 2006.

**Presentations**

- [10] Anna Koop. Empirical Prediction [Presentation]. Cognition Seminar at the University of Alberta, Department of Psychology, 2010. Edmonton, AB.
- [11] Anna Koop, Marc G. Bellemare, and Richard S. Sutton. Knowledge Representation for Autonomous Robotics [Poster]. Multi-disciplinary Symposium on Reinforcement Learning (MSRL 2009), 2009. Montreal, QC.
- [12] Marc G. Bellemare, Thomas Degris, Anna Koop, Michael Sokolsky, Brian Tanner, and Adam White. RLAI Robotic Simulator [Poster]. Multi-disciplinary Symposium on Reinforcement Learning (MSRL 2009), 2009. Montreal, QC.
- [13] Anna Koop. A Non-expert Guide to Semi-Supervised Learning [Presentation]. Lunch Learning Lectures at the University of Alberta, 2009. Edmonton, AB.
- [14] Anna Koop. Temporal Abstraction for Knowledge Representation [Presentation]. Bellairs Workshop on Fast Reinforcement Learning, 2009. Holetown, Barbados.
- [15] Anna Koop. Tracking and Temporal Coherence [Presentation]. Bellairs Workshop on Reinforcement Learning, 2008. Holetown, Barbados.
- [16] Anna Koop. Investigating Experience: Temporal Coherence and Empirical Knowledge Representation [Seminar]. Graduate Seminar at the University of Alberta, 2007. Edmonton, AB.
- [17] Richard S. Sutton, Anna Koop, and David Silver. On the Role of Tracking in Stationary Environments [Poster]. The 24th International Conference on Machine Learning (ICML 2007), 2007. Corvallis, OR.
- [18] Anna Koop and Richard S. Sutton. The important thing about experience is that it has a now [Poster]. NIPS 2006 Workshop on Grounding Perception, Knowledge, and Cognition in Sensori-Motor Experience, 2006. Whistler, BC.
- [19] Richard S. Sutton, Eddie J. Rafols, and Anna Koop. Temporal abstraction in temporal-difference networks [Poster]. Neural Information Processing Systems 18 (NIPS 2005), 2005. Vancouver, BC.

## Outreach

- Coordinator for the Fall 2010 Pacman Contest for CSC 366** 2010  
Ran the extra-credit contest using the Berkeley software package, coordinating with students and presenting final results.
- Co-chair for the 2008 Workshop for Women in Machine Learning** 2008–2009  
Organized and managed finances for the Third Annual Workshop for Women in Machine Learning, an international workshop co-located with NIPS 2008.
- Volunteer Presenter** 2006–2010  
Presented on artificial intelligence and reinforcement learning at outreach events for junior high and high school students.
- Curriculum Developer** 2007  
Headed development of demonstration software for teaching middle school and high school students about artificial intelligence.

**WISEST Supervisor**

2005

Supervised a high school student over two months who learned Javascript and developed a widget for Mac computers. Part of the WISEST summer research program.

**Seminar Coordinator**

2004–2005

Organized the weekly AI seminar, working with distinguished visitors and local professors, including cross-department outreach. Coordinated the department-wide Machine Learning Reading Group.