# ABRAM FRIESEN

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## EDUCATION

PRESENT **University of Washington**, Seattle, WA, USA
Ph.D. Candidate in Computer Science & Engineering
Area: Machine Learning and Optimization
Advisor: Pedro Domingos

2010 **University of Washington**, Seattle, WA, USA
M.S. Computer Science & Engineering
Area: Reinforcement Learning and Cognitive Science
Advisor: Rajesh Rao

2006 **University of Victoria**, Victoria, BC, Canada
B.Eng. Computer Engineering with Mechatronics Option
IEEE Gold medal for highest graduating GPA

## CONFERENCE ARTICLES

[C.6] **Abram Friesen** and Pedro Domingos. Recursive Decomposition for Nonconvex Optimization. In *Proceedings of the International Joint Conference on Artificial Intelligence* (IJCAI 2015).

[C.5] Yanping Huang, **Abram Friesen**, Timothy Hanks, Michael Shadlen, and Rajesh Rao (2012). How Prior Probability Influences Decision Making: A Unifying Probabilistic Model. In *Proceedings of the 26th Annual Conference on Neural Information Processing Systems* (NIPS 2012).

[C.4] Joseph Austerweil, **Abram Friesen**, and Thomas Griffiths (2011). An Ideal-Observer Model for Identifying the Reference Frame of Objects. In *Proceedings of the 25th Annual Conference on Neural Information Processing Systems* (NIPS 2011).

[C.3] **Abram Friesen** and Rajesh Rao (2011). Gaze Following as Goal Inference: A Bayesian Model. In *Proceedings of the 33rd Annual Conference of the Cognitive Science Society* (COGSCI 2011).

[C.2] **Abram Friesen** and Rajesh Rao (2010). Imitation Learning With Hierarchical Actions. In *Proceedings of the International Conference on Learning and Development* (ICDL 2010).

[C.1] Kristi Morton, **Abram Friesen**, Magdalena Balazinska, and Dan Grossman (2010). Estimating the Progress of Map-Reduce Pipelines. In *Proceedings of the 26th IEEE International Conference on Data Engineering* (ICDE 2010).

## WORKSHOP PAPERS

[W.2] **Abram Friesen** and Pedro Domingos (2014). Exploiting Structure for Tractable Nonconvex Optimization. In *Learning Tractable Probabilistic Models Workshop at the International Conference on Machine Learning* (LTPM at ICML 2014).

[W.1] **Abram Friesen** and Pedro Domingos (2013). Nonconvex Optimization is Combinatorial Optimization. In *Workshop on Optimization for Machine Learning at the Annual Conference for Neural Information Processing Systems* (OPT at NIPS 2013).

## PROFESSIONAL EXPERIENCE

2013 - PRESENT **University of Washington**, Seattle, WA, USA
Computer Science & Engineering
*Graduate Research Assistant* with Pedro Domingos.
Researching and developing novel algorithms for tractable optimization, integration, and inference and applying these to problems in machine learning and protein folding.

2008 - 2012 **University of Washington**, Seattle, WA, USA
Computer Science & Engineering
*Graduate Research Assistant* with Rajesh Rao.
Developed models of planning and decision-making, specifically focusing on reinforcement learning, imitation, and goal-inference.

2011 **MIT**, Cambridge, MA, USA
Joint with the Computer Science and Artificial Intelligence Laboratory and Brain and Cognitive Sciences.
*Visiting Researcher* with David Wingate, Leslie Kaelbling, and Josh Tenenbaum.
Investigated probabilistic programming methods for reinforcement learning and applied reinforcement learning to create adaptive inference algorithms.

2011 **UC Berkeley**, Berkeley, CA, USA
*Visiting Researcher* with Thomas Griffiths.
Used nonparametric Bayesian methods to propose an ideal-observer model for inferring the reference frames in a visual scene.

2010 **Intel Research**, Seattle, WA, USA
*Research Intern* with Dieter Fox.
Developed software to enable 3-D depth camera to track and process human movements in order to control a robotic arm. This technology was subsequently used in Intel's chess-playing robot demonstration.

2006 - 2008 **Itiva Development**, Palo Alto, CA, USA and Kelowna, BC, Canada
*Software Engineer* (C++)
Worked with a small team to develop a fast, reliable content distribution system that used both peer-to-peer technology and existing internet infrastructure to maximize performance and minimize cost. Co-wrote the multithreaded, cross-platform, client; focused on adding intelligence to improve download speed and efficiency.

## TEACHING EXPERIENCE

**University of Washington**, Seattle, WA, USA
Computer Science & Engineering

2013 *Organizer, Presenter, and Discussion Leader*
CSE 590A (Graduate Seminar) – Why Are We Now Better Suited to Solving AI?
Prepared introductions to seminal AI & ML works and conducted discussions on these topics with respect to their relevance today and what effect they had on

the AI community in the intervening years.

2009 *Teaching Assistant*
CSE 403 (Undergraduate) – Software Engineering with Professor David Notkin.
CSEP 573 (Professional Masters) – Applications of Artificial Intelligence with Professor Rajesh Rao.

## INVITED TALKS

2011 **MIT**, Cambridge, WA, USA
Rebecca Saxe lab meeting. Gaze Following as Goal Inference: A Bayesian Model.

## PROFESSIONAL SERVICE

2013-PRESENT **Reviewer**
NIPS 2014 NIPS 2013 IJCAI 2015

2009 **New Graduate Student Orientation Committee**
Computer Science and Engineering, University of Washington
Co-chaired new graduate student orientation.

**Tutor**
2009-2010 Undergraduate math and computer science.
1999-2006 Elementary and high school math.

## AWARDS AND HONORS

2010-2013 Natural Sciences and Engineering Research Council of Canada Ph.D. Fellowship
2010-2011 Travel grants from Google, NIPS, and ICDL
2006 IEEE Gold Medal in Computer Engineering (highest graduating GPA)
2005 University of Victoria President's Scholarship
2004 James R. Bullick Memorial Scholarship for an Outstanding Engineer
2001-2005 Tom Toynbee Academic and Community Scholarship