# Jason Hartford

University of British Columbia
Department of Computer Science
ICICS/CS Building X560 - 2633 Main Mall
Vancouver V6T 1Z4

Phone:       (236) 999-7717
Email:       hartford.jason@gmail.com
Homepage:    http://www.cs.ubc.ca/~jasonhar

## Research Interests

I am broadly interested in how we can leverage structural assumptions about data generating processes to make flexible machine learning model generalize beyond the observed distribution of training data. To this end, I have worked on using deep learning for causal inference, and on designing deep network architectures for permutation invariant data with applications to game theory and classical decision problems such as Boolean satisfiability.

## Education

2016- DOCTOR OF PHILOSOPHY in Computer Science, University of British Columbia, Canada.

2014-2016 MASTER OF SCIENCE in Computer Science, University of British Columbia, Canada. *Thesis title: "Deep learning for predicting human strategic behavior"*

2010-2011 MASTER OF ECONOMIC SCIENCE in Economics, University of the Witwatersrand, South Africa. *Thesis title: "A club theory of bandits"*

2013-2014 BACHELOR OF SCIENCE (HONOURS) in Computer Science, University of the Witwatersrand, South Africa.

2009-2010 BACHELOR OF ECONOMIC SCIENCE (HONOURS) in Economics, University of the Witwatersrand, South Africa.

2008-2009 HIGHER DIPLOMA in Computer Science, University of the Witwatersrand, South Africa.

2005-2007 BACHELOR OF SCIENCE in Mathematical Statistics and Mathematical Techniques, University of the Witwatersrand, South Africa.

## Employment

2017 *Research Intern*, Microsoft Research Redmond.
Worked with Matt Taddy on surveying the general problem of estimating uncertainty in deep neural networks.

2016 *Research Intern*, Microsoft Research New England.
Worked with Greg Lewis and Matt Taddy in developing DeepIV, new method for estimating causal relationships using deep neural networks.

2013-2014 *Associate Lecturer*, University of the Witwatersrand.

# Research

## *Preprints*

2020 **Jason Hartford**, Victor Veitch, Dhanya Sridhar, Kevin Leyton-Brown, "Valid Causal Inference with (Some) Invalid Instruments."

## *Competitive Peer-Reviewed Conferences*

2020 Chris Cameron, Rex Chen, **Jason Hartford**, Kevin Leyton-Brown, "Predicting Propositional Satisfiability via End-to-End Learning", *The Thirty-Fourth AAAI Conference on Artificial Intelligence (AAAI-20).*

2018 **Jason Hartford**, Devon R Graham, Kevin Leyton-Brown, Siamak Ravanbakhsh, "Deep Models of Interactions Across Sets", *ICML 2018: Proceedings of the 35th International Conference on Machine Learning, 2018.*

2017 **Jason Hartford**, Greg Lewis, Kevin Leyton-Brown and Matt Taddy, "Deep IV: A Flexible Approach for Counterfactual Prediction", *ICML 2017: Proceedings of the 34th International Conference on Machine Learning, 2017.*

2016 **Jason Hartford**, James R. Wright, and Kevin Leyton-Brown, "Deep Learning for Predicting Human Strategic Behavior", *NIPS 2016: Thirtieth Annual Conference on Neural Information Processing Systems, 2016.* **Oral Presentation - 1.7% acceptance rate**

## *Workshops*

2019 **Jason Hartford**, Kevin Leyton-Brown, "Identifying Valid Instruments via Effect Agreement.", *"Do the right thing": Machine Learning and Causal Inference for Improved Decision Making Workshop at NeurIPS, 2019.*

2019 Chris Cameron, Rex Chen, **Jason Hartford**, Kevin Leyton-Brown, "Predicting Propositional Satisfiability via End-to-End Learning.", *Graph Representation Learning Workshop at NeurIPS 2019.*

2016 **Jason Hartford**, Greg Lewis, Kevin Leyton-Brown and Matt Taddy, "Deep Counterfactual Prediction using Instrumental Variables.", *What if? Inference and Learning of Hypothetical and Counterfactual Interventions in Complex Systems. NIPS Workshop, 2016.*

## *Talks*

2020 **Jason Hartford** "Valid Causal Inference with (Some) Invalid Instrumental Variables.", *MILA Tea Talks, University of Montreal, 2020.*

2020 **Jason Hartford** "Learning for decision making.", *Brown University 2020.*

2016 **Jason Hartford** "Deep IV: A Flexible Approach for Counterfactual Prediction.", *UAI Workshop on Causality 2017.*

# Awards

2018 NIPS 2018 Top Reviewer Award - Free conference registration.

2017 ICML 2017 Travel Award - $1800.

2016 NIPS 2016 Travel Award - $1000.

2016  Graduate Teaching Assistant Award.

2011  Economic Research South Africa Prize - $100.

2005  Merit Scholarship - Academic Excellence - $2000.

# Editorial Activity

2020  Program Committee Neural Information Processing Systems (NeurIPS) 2020, Vancouver, Canada.

2020  Program Committee International Conference on Machine Learning (ICML 2020).

2020  Program Committee The 23rd International Conference on Artificial Intelligence and Statistics (AISTATS) 2020, Palermo, Sicily, Italy.

2020  Program Committee International Conference on Learning Representations (ICLR) 2020, Addis Ababa, Ethiopia.

2020  Program Committee The 34th AAAI Conference on Artificial Intelligence (AAAI) 2020, New York, USA.

2019  Program Committee Neural Information Processing Systems (NeurIPS) 2019, Vancouver, Canada.

2019  Program Committee 36th International Conference on Machine Learning (ICML) 2019, Long Beach, USA.

2018  Program Committee The 22nd International Conference on Artificial Intelligence and Statistics (AISTATS) 2019, Okinawa, Japan.

2018  Program Committee International Conference on Learning Representations (ICLR) 2019, New Orleans, USA.

2018  Program Committee Neural Information Processing Systems (NIPS) 2018, Montreal, Canada.

2018  Reviewer Autonomous Agents and Multi-Agent Systems.

2018  Reviewer Journal of Experimental & Theoretical Artificial Intelligence.

2018  Program Committee ICML 2018, Stockholm, Sweden.

2016  Reviewer - Thirtieth Annual Conference on Neural Information Processing Systems, 2016.

# Teaching

2017  *Teaching Assistant*, University of British Columbia, CPSC540 - Graduate Machine Learning, Mark Schmidt.

2014  *Teaching Assistant*, University of British Columbia, CPSC340 - Machine Learning, Raymond Ng.

2015  *Teaching Assistant*, University of British Columbia, Computing for Life Sciences, Ian Mitchell.

2013-2014  *Associate Lecturer*, University of the Witwatersrand. First-year Microeconomics and part of Third-year Econometrics.

# Service

2017 Volunteer - NIPS 2017: Thirtieth Annual Conference on Neural Information Processing Systems.

2016 Volunteer - ICML 2016: 33rd International Conference on Machine Learning.