VICTOR VEITCH

victorveitch@gmail.com · victorveitch.com · github.com/vveitch

I am a machine learning researcher. I am an Assistant Professor of Data Science and Statistics at the University of Chicago and a Research Scientist at Google Cambridge. My recently work addresses the intersection of causal inference and machine learning. This includes the use of machine learning for the estimation of causal effects, and the application of causality to develop safe and trustworthy machine learning.

EDUCATION

2013-2017	Ph.D. Statistics - **University of Toronto** (Sparse) Exchangeable Random Graphs Advisor: Daniel Roy Committee: Radford Neal, Nancy Reid, Svante Janson **Statistical Society of Canada Pierre Robillard Award** (best statistics thesis in Canada) **Doctoral Award for Excellence in Research** (best statistics thesis at Toronto)
2011-2013	Masters of Mathematics - **University of Waterloo** Negative Quasi-Probability in the Context of Quantum Computation Advisor: Joseph Emerson Committee: Richard Cleve, Robert Koenig **Outstanding Achievement in Graduate Studies Award** (mathematics faculty best thesis)
2006-2011	Bachelor of Science - **University of Waterloo**

PUBLICATIONS AND PREPRINTS

Google Scholar · scholar.google.ca/citations?user=xkn_XZgAAAAJ&hl=en

2021	Counterfactual Invariance to Spurious Correlations: Why and How to Pass Stress Tests. *V. Veitch*, A. d'Amour, S. Yadlowsky, J. Eisenstein. arxiv.org/abs/2106.00545
2021	Invariant Representation Learning for Treatment Effect Estimation. C. Shi, *V. Veitch*, D. Blei **UAI 2021**
2021	Causal Effects of Linguistic Properties. R. Pryzant, D. Card, *V. Veitch*, D. Sridhar **NAACL 2021**
2021	Valid Causal Inference with (Some) Invalid Instruments. J. Hartford, *V. Veitch*, D. Sridhar, K. Leyton-Brown. **ICML 2021**
2021	A Digital Field Experiment Reveals Large Effects of Friend-to-Friend Texting on Voter Turnout Authors. A. Schein, K. Vafa, D. Sridhar, *V. Veitch*, J. Quinn, J. Moffet, D. Blei, D. Green. **WWW 2021**
2021	Bootstrap estimators for the tail-index and for the count statistics of graphex processes. Z. Naulet, E. Sharma, *V. Veitch*, and D. Roy. **Electronic Journal of Statistics**
2021	The Holdout Randomization Test for Feature Selection in Black Box Models. W. Tansey, *V. Veitch*, H. Zhang, R. Rabadan, and D. Blei. **Journal of Computational and Graphical Statistics**
2020	Sense and Sensitivity Analysis: Simple Post-Hoc Analysis of Bias Due to Unobserved Confounding. *V. Veitch*, and A. Zaveri. **NeurIPS 2020** (Spotlight)
2020	Adapting Text Embeddings for Causal Inference. *V. Veitch*, D. Sridhar, and D. Blei. **UAI 2020**
2019	Adapting Neural Networks for the Estimation of Treatment Effects. C. Shi, D. Blei, and *V. Veitch*. Corresponding author **NeurIPS 2019**

2019   USING EMBEDDINGS TO CORRECT FOR UNOBSERVED CONFOUNDING IN NETWORKS.
V. Veitch, Y. Wang, and D. Blei. **NeurIPS 2019**

2019   EMPIRICAL RISK MINIMIZATION AND STOCHASTIC GRADIENT DESCENT FOR RELATIONAL DATA.
V. Veitch, M. Austern, W. Zhou, D. Blei, and P. Orbanz. **AISTATS 2019** (Oral)

2019   NON-VACUOUS GENERALIZATION BOUNDS AT THE IMAGENET SCALE: A PAC-BAYESIAN COMPRESSION APPROACH .
W. Zhou, *V. Veitch*, M. Austern, R. Adams, and P. Orbanz. **ICLR 2019**

2018   SAMPLING PERSPECTIVES ON (SPARSE) EXCHANGEABLE GRAPHS.
C. Borgs, J. Chayes, H. Cohn, *V. Veitch* Authors listed alphabetically
Annals of Probability

2018   SAMPLING AND ESTIMATION FOR (SPARSE) EXCHANGEABLE GRAPHS.
V. Veitch, D.M. Roy. **Annals of Statistics**

2017   EXCHANGEABLE MODELING OF RELATIONAL DATA: CHECKING SPARSITY, TRAIN-TEST SPLITTING, AND SPARSE EXCHANGEABLE POISSON MATRIX FACTORIZATION.
V. Veitch, E. Sharma, Z. Naulet, and D. Roy, arXiv.org/abs/1712.02311

2015   THE CLASS OF RANDOM GRAPHS ARISING FROM EXCHANGEABLE RANDOM MEASURES.
V. Veitch, D.M. Roy. arxiv.org/abs/1512.03099

2014   CONTEXTUALITY SUPPLIES THE 'MAGIC' FOR QUANTUM COMPUTATION.
M. Howard, J. Wallman, *V. Veitch*, J. Emerson. **Nature** 510, 351–355. doi:10.1038/nature13460

2013   THE WHOLE IS GREATER THAN THE SUM OF THE PARTS: ON THE POSSIBILITY OF PURELY STATISTICAL INTERPRETATIONS OF QUANTUM THEORY.
J. Emerson, D. Serbin, C. Sutherland, *V. Veitch*. arxiv.org/abs/1312.1345

2013   THE RESOURCE THEORY OF STABILIZER QUANTUM COMPUTATION.
V. Veitch et al. **New J. Phys.** 16 013009 doi:10.1088/1367-2630/16/1/013009

2013   EFFICIENT SIMULATION SCHEME FOR A CLASS OF QUANTUM OPTICS EXPERIMENTS WITH NON-NEGATIVE WIGNER REPRESENTATION.
V. Veitch et al. **New J. Phys.** 15 013037 doi:10.1088/1367-2630/15/1/013037

2013   NEGATIVE QUASI-PROBABILITY AS A RESOURCE FOR QUANTUM COMPUTATION.
V. Veitch et al. **New J. Phys.** 14 113011 doi:10.1088/1367-2630/14/11/113011

EMPLOYMENT

2021–present   ASSISTANT PROFESSOR
Data Science and Statistics, University of Chicago

2020–present   RESEARCH SCIENTIST
Google Research, Cambridge

2017–2020   DISTINGUISHED POSTDOCTORAL RESEARCH SCIENTIST
Department of Statistics, Columbia Univeristy
Advised by David Blei and Peter Orbanz

2016   MICROSOFT RESEARCH INTERN
Microsoft Research New England
Advised by Christian Borgs, Jennifer Chayes, and Henry Cohn

AWARDS AND HONORS

2018   Statistical Society of Canada Pierre Robillard Award
(best Canadian statistics Ph.D thesis)

2018   NSERC Postdoctoral Fellowship
(National Science and Engineering Research Council of Canada postdoctoral fellowship)

2018   Distinguished Postdoctoral Fellowship
(Columbia University Department of Statistics named postdoc)

2018	NeurIPS Top Reviewer
	(top 218)
2017	University of Toronto Statistics Doctoral Award for Excellence in Research
	(best Ph.D thesis)
2016	Best Oral Presentation at Statistical Society of Canada Meeting
2015	Best Theory Poster at 10th Conference on Bayesian Nonparameterics
2015	University of Toronto Statistical Sciences Teaching Assistant Award
2013	University of Waterloo Outstanding Achievement in Graduate Studies
	(Mathematics faculty best thesis award)
2013	NSERC PGS-D
	(National Science and Engineering Research Council doctoral award)
2013	Ontario Graduate Scholarship (declined)
2012	Ontario Graduate Scholarship
2011	Ontario Graduate Scholarship

TALKS

2019	"Deep Learning for Causal Inference"
	Invited talk at Columbia University Medical Campus. New York, USA.
2019	"Deep Learning for Causal Inference"
	Invited talk at Yahoo! research. New York, USA.
2019	"Empirical Risk Minimization and Stochastic Gradient Descent for Relational Data"
	Invited talk at Columbia Statistics Student Seminar. New York, USA.
2019	"Empirical Risk Minimization and Stochastic Gradient Descent for Relational Data"
	Oral presentation at AISTATS 2019. Naha, Japan.
2018	"Empirical Risk Minimization and Stochastic Gradient Descent for Relational Data"
	Invited talk at Japanese Statistical Society. Tokyo, Japan.
2018	"Sparse exchangeable graphs and relational empirical risk minimization"
	Pierre Robillard lecture. Montreal, Canada.
2018	"Compression and Generalization in Deep Learning"
	Invited talk at CWI Amsterdam. Amsterdam, Netherlands
2018	"Empirical risk minimization and stochastic gradient descent for relational data"
	Invited talk at Critical and Collective Effects in Graphs and Networks. Eindhoven, Netherlands
2017	"Exchangeable Modeling of Relational Data"
	Invited talk at CMStatistics. London, England.
2017	"(Sparse) exchangeable graphs"
	Invited talk at Northwestern probability seminar. Evanston, USA.
2017	"Sampling and estimation for (sparse) exchangeable graphs"
	Invited talk at 11th Conference on Bayesian Nonparametrics. Paris, France.
2017	"Sampling and estimation for (sparse) exchangeable graphs"
	Invited talk at Bayesian Inference in Stochastic Processes. Milano, Italy.
2017	"(Sparse) exchangeable graphs and graph limits"
	Invited talk at Large Random Graphs. Bonn, Germany.
2017	"(Sparse) exchangeable graphs"
	Invited talk at McGill Statistics Seminar. Montreal, Canada.
2016	"Inference for Sparse Random Graphs"
	Invited talk at MIT CSAIL. Boston, United States.
2013	"The Resource Theory of Stabilizer Computation"
	Invited talk at CIFAR Quantum Information meeting. Edmonton, Canada.
2013	"Negative Quasi-Probability as a Resource for Quantum Computation."
	Contributed talk at Quantum Information Processing. Beijing, China.

2021   "Causality and NLP" Workshop
      EMNLP 2021 (with many others)

2019   "Human-aligned AI" Official NeurIPS Social
      NeurIPS 2019 (with Claudia Shi and Adam Gleave)

2019   "Data Science Institute Speaker Series" Speaker Series
      Columbia University (with Dhanya Sridhar and Aaron Schein)

2016   "Teaching with Shiny Apps" Workshop
      Statistical Society of Canada meeting (with Alison Gibbs and John Braun)