

Qiang Liu

CONTACT INFORMATION	Qiang.Liu@dartmouth.edu www.cs.dartmouth.edu/~qliu/
RESEARCH INTERESTS	Statistical machine learning, probabilistic graphical models, Bayesian inference, deep learning, human computation and crowdsourcing, and other data-driven applications.
WORK EXPERIENCE	Dartmouth College , Hanover, NH <ul style="list-style-type: none">Assistant Professor in Computer Science, 07/2015-present MIT, CSAIL , Cambridge, MA <ul style="list-style-type: none">Postdoctoral Associate, Advisor: John Fisher III, 01/2015 - 06/2015 Microsoft Research Redmond , Redmond, WA <ul style="list-style-type: none">Visiting Researcher, 07/2017-09/2017Research Intern, Mentors: Chris Meek, John Platt, Summer 2011
EDUCATION	University of California at Irvine , Irvine, CA <ul style="list-style-type: none">Ph.D. Computer Science, Adviser: Alexander Ihler, 2009-2015Mathematical and Computational Biology (MCB) program, 2008-2009 Beihang University , Beijing, China <ul style="list-style-type: none">B.S., Information and Computation Science, 2004-2008
AWARDS	NSF CISE Research Initiation Initiative (CRII), \$157k, 2016-2017 Microsoft Research Ph.D Fellowship, 2011 Notable Paper Award, International Conference on AI and Statistics (AISTATS), 2011
TEACHING	<i>Advanced Topics in Machine Learning, Dartmouth College, Winter 2017</i> <i>Machine Learning and Statistic Analysis, Dartmouth College, Spring 2017</i> <i>Numerical and Computational Tools for Applied Science, Dartmouth College, Fall 2016</i> <i>Advanced Topics in Machine Learning, Dartmouth College, Winter 2016</i> <i>Machine Learning and Statistic Analysis, Dartmouth College, Spring 2016</i>
PROFESSIONAL ACTIVITIES	<i>Action Editor</i> : Journal of Machine Learning Research (JMLR), 2015-present <i>Senior PC Member</i> : ICJAI 2017 <i>Conference Reviewing</i> : ICML, NIPS, UAI, AISTATS, AAAI, etc. <i>Journal Reviewing</i> : JMLR, Neural Computation, TPAMI, TACL, etc. <i>Workshop Organization</i> : <ul style="list-style-type: none">NIPS Workshop on Crowdsourcing: Theory, Algorithms and Applications, 2013ICML Workshop: Machine Learning Meets Crowdsourcing, 2013
PUBLICATIONS	Q. Liu , Lee; Black-box Importance Sampling. <i>AI and Statistics (AISTATS)</i> . 2017 Bertasius, Liu , Torresani, Shi; Local Perturb-and-MAP for Structured Prediction. <i>AI and Statistics (AISTATS)</i> . 2017

- Q. Liu**, D. Wang. Stein Variational Gradient Descent: A General Purpose Bayesian Inference Algorithm, *Advances in Neural Information Processing Systems (NIPS)*. 2016
- Q. Liu**, J.D. Lee, M. Jordan. A Kernelized Stein Discrepancy for Goodness-of-fit Tests and Model Evaluation. *International Conference on Machine Learning (ICML)*. 2016.
- J. Han, **Q. Liu**. Bootstrap Model Aggregation for Distributed Statistical Learning *Advances in Neural Information Processing Systems (NIPS)*. 2016
- W. Ping, **Q. Liu**, A. Ihler. Learning Infinite RBMs with Frank-Wolfe *Advances in Neural Information Processing Systems (NIPS)*. 2016
- T. Li, **Q. Liu**, X. Zhou. Practical Human Sensing in the Light *Conference on Mobile Systems, Applications, and Services (MobiSys)*. 2016 (**SIGMobile Research Highlights**)
- D. Wang, J. Fisher III, **Q. Liu**. Efficient Observation Selection in Probabilistic Graphical Models Using Bayesian Lower Bounds. *Uncertainty in Artificial Intelligence (UAI)*. 2016
- Q. Liu**. Importance Weighted Consensus Monte Carlo for Distributed Bayesian Inference *Uncertainty in Artificial Intelligence (UAI)*. 2016
- J.D. Lee, **Q. Liu**, Y. Sun, J. Taylor. Communication-Efficient Sparse Regression: a One-Shot Approach *Journal of Machine Learning Research (JMLR)*. 2016
- Q. Liu**, J. Fisher III, A. Ihler. Probabilistic Variational Bounds for Graphical Models *Advances in Neural Information Processing Systems (NIPS)*. 2015.
- W. Ping, **Q. Liu**, A. Ihler. Decomposition Bounds for Marginal MAP *Advances of the Neural Information Processing Systems (NIPS)*. 2015.
- Q. Liu**, J. Peng, A. Ihler, J. Fisher III. Estimating the Partition Function by Discriminance Sampling *Uncertainty in Artificial Intelligence (UAI)*. 2015.
- Q. Liu**, A. Ihler. Distributed Estimation, Information Loss and Exponential Families *Advances in Neural Information Processing Systems (NIPS)*. 2014.
- D. Zhou, **Q. Liu**, J. Platt, C. Meek. Aggregating Ordinal Labels from Crowds by Minimax Conditional Entropy *International Conference on Machine Learning (ICML)*. 2014.
- W. Ping, **Q. Liu**, A. Ihler. Marginal structured SVM with hidden variables. *International Conference on Machine Learning (ICML)*. 2014.
- Q. Liu**, M. Steyvers, A. Ihler. Marginal structured SVM with hidden variables *Advances in Neural Information Processing Systems (NIPS)*. 2013.
- Q. Cheng, **Q. Liu**, A. Ihler. Variational Planning for Graph-based MDPs. *Advances in Neural Information Processing Systems (NIPS)*. 2013.
- Q. Liu**, A. Ihler. Variational algorithms for marginal MAP. *Journal of Machine Learning Research (JMLR)*. 2013.
- Q. Liu**, J. Peng, A. Ihler. Variational Inference for Crowdsourcing. *Advances in Neural Information Processing Systems (NIPS)*. 2012.

- M. Geyfman, V. Kumar, **Q. Liu**, R. Ruiz, W. Gordon, F. Espitia, E. Cam, S.E. Millar, P. Smyth, A. Ihler, J.S. Takahashi, B. Andersen. Brain and muscle Arnt-like protein-1 (BMAL1) controls circadian cell proliferation and susceptibility to UVB-induced DNA damage in the epidermis. *Proc Natl Acad Sci USA* doi:10.1073/pnas.120959210. 2012.
- Q. Liu**, A. Ihler. Belief Propagation for Structured Decision Making. *Uncertainty in Artificial Intelligence (UAI)*. 2012.
- Q. Liu**, A. Ihler. Distributed Parameter Estimation via Pseudo-likelihood. *International Conference on Machine Learning (ICML)*. 2012.
- G. Zweig, J.C. Platt, C. Meek, C.J.C. Burges, A. Yessenalina, **Q. Liu**. Computational Approaches to Sentence Completion. in *ACL 2012, ACL/SIGPARSE*. 2012.
- Q. Liu**, A. Ihler. Variational algorithms for marginal MAP. *Uncertainty in Artificial Intelligence (UAI)* 2011.
- Q. Liu**, A. Ihler. Bounding the Partition Function using Holder's Inequality. *International Conference on Machine Learning (ICML)*. 2011.
- Q. Liu**, A. Ihler. Learning Scale Free Networks by Reweighted L_1 Regularization. *AI & Statistics*. 2010. (**Notable Paper Award**)
- Q. Liu**, A. Ihler. Negative Tree Reweighted Belief Propagation. *Uncertainty in Artificial Intelligence (UAI)*. July 2010.
- A. Asuncion, **Q. Liu**, A. Ihler, P. Smyth. Particle Filtered MCMC-MLE with Connections to Contrastive Divergence. *International Conference on Machine Learning (ICML)*. June 2010.
- A. Asuncion, **Q. Liu**, A. Ihler, P. Smyth. Learning with Blocks: Composite Likelihood and Contrastive Divergence. *AI & Statistics (AISTATS)*. April 2010.
- Q. Liu**, K.K. Lin, B. Anderson, P. Smyth, A. Ihler. Estimating Replicate Time-Shifts Using Gaussian Process Regression. *Bioinformatics*, 26(6), Mar. 2010, pp. 770-776; doi:10.1093/bioinformatics/btq022

TALKS

Distributed Learning, Exponential Families, Information Loss.

- *International Chinese Statistical Association (ICSA), Canada*, August, 2017
- *39th Annual ISMS Marketing Science Conference, USC*, June, 2017
- *AI/ML Seminar, Department of Computer Science, UC Irvine*, November, 2014

Stein Variational Method for Deep Probabilistic Modeling

- *40th Conference on Stochastic Processes and Their Applications, July, 2018*
- *SAMSI workshop on Monte Carlo sampling algorithms*, December, 2017
- *11th International Conference on Monte Carlo Methods and Applications*, July, 2017
- *MSR Colloquium, Microsoft Research New England*, June, 2017
- *Machine Learning and Friends Lunch, UMassAmherst*, June, 2017
- *SIAM Conference Computer Science Engineering, Atlanta*, March, 2017
- *ACDL Seminar Series, MIT*, February, 2017
- *Computer Science, Tsinghua University*, December, 2016
- *AI/ML Seminar, Department of Computer Science, UC Irvine*, November, 2016
- *Statistical Seminar, University of Southern California*, November, 2016

Learning to Draw Samples: With Application to Amortized MLE for Generative Adversarial Training.

- *NIPS Bayesian Deep Learning Workshop*, December, 2016

Machine Learning for Collective Intelligence.

- *4th Young Investigator Conference (EITA-YIC)*, MIT, August, 2015

Belief Propagation for Crowdsourcing.

- *AI/ML Seminar, Department of Computer Science, UC Irvine*, April, 2013
- *Microsoft Research Redmond*, January, 2013
- *Google Research*, November, 2012.
- *Interdisciplinary Workshop on Information and Decision in Social Networks*, MIT, November, 2012

Message Passing for Estimation and Decision in Graphical models.

- *Department of Computer Science, UCLA*, November, 2012

Variational Approaches for Approximate Inference — All About Weights.

- *AI/ML Seminar, Department of Computer Science, UC Irvine*, May, 2011