Qiang Liu

CONTACT INFORMATION	lqiang@cs.utexas.edu http://https://www.cs.utexas.edu/~lqiang/

RESEARCH INTERESTS

Statistical machine learning, Reinforcement learning probabilistic graphical models, Bayesian inference, deep learning, human computation and crowdsourcing, and other data-driven applications.

EMPLOYMENT

The University of Texas at Austin, Austin, TX
- Assistant Professor in Computer Science, 01/2018-present

Dartmouth College, Hanover, NH
- Assistant Professor in Computer Science, 07/2015-01/2018

MIT, CSAIL, Cambridge, MA
- Postdoctoral Associate, Advisor: John Fisher III, 01/2015 - 06/2015

EDUCATION

University of California at Irvine, Irvine, CA
- Ph.D. Computer Science, Adviser: Alexander Ihler, 2009-2015
- Mathematical and Computational Biology (MCB) program, 2008-2009

Beihang University, Beijing, China
- B.S., Information and Computation Science, 2004-2008

INTERN

Microsoft Research Redmond, Redmond, WA
- Research Intern, Mentors: Chris Meek, John Platt, Summer 2011

AWARDS

NSF CISE Research Initiation Initiative (CRII), $157k, 2016-2017
SIGMobile Research Highlights, 2016
First Place in Shared Task Challenge in Crowdsourcing at Scale, 2013
Microsoft Research Ph.D Fellowship, 2011
Notable Paper Award, International Conference on AI and Statistics (AISTATS), 2011
CCBS Research Opportunity Award Grant, "Modeling the Hair Cycle", $11,000, 2009
Microsoft Research Asia Young Fellowship, 2007

TEACHING

Advanced Topics in Machine Learning, Dartmouth College,Winter 2017
Machine Learning and Statistic Analysis, Dartmouth College, Spring 2017
Numerical and Computational Tools for Applied Science, Dartmouth College, Fall 2016
Advanced Topics in Machine Learning, Dartmouth College,Winter 2016
Machine Learning and Statistic Analysis, Dartmouth College, Spring 2016

PROFESSIONAL ACTIVITIES

Action Editor: Journal of Machine Learning Research (JMLR), 2015-present
Area Chair / Senior PC Member: IJCAI 2016, AAAI 2016, NIPS 2018, ICLR 2019
Conference Reviewing: ICML, NIPS, UAI, AISTATS, AAAI, etc.
Journal Reviewing: JMLR, Neural Computation, TPAMI, TACL, etc.
Workshop Organization:
- NIPS Workshop on Crowdsourcing: Theory, Algorithms and Applications, December 2013.

- ICML Workshop: Machine Learning Meets Crowdsourcing, June 2013.

PUBLICATIONS   J. Han, **Q. Liu**; Stein Variational Gradient Descent Without Gradient. *International Conference on Machine Learning (ICML)*. 2018

D. Wang, Z. Zeng, **Q. Liu**; Stein Variational Message Passing for Continuous Graphical Models. *International Conference on Machine Learning (ICML)*. 2018

T. Xu, L. Zhao, **Q. Liu**, J. Peng; Learning to Explore via Meta-Policy Gradient. *International Conference on Machine Learning (ICML)*. 2018

J. Yang, **Q. Liu**, V. A Rao, J. Neville; Goodness-of-fit Testing for Discrete Distributions via Stein Discrepancy. *International Conference on Machine Learning (ICML)*. 2018

P. Zhang, **Q. Liu**, D. Zhou, T. Xu, X. He; On the Discrimination-Generalization Trade-off in GANs. *International Conference on Learning Representation (ICLR)*. 2018

H. Liu, Y. Feng, Y. Mao, D. Zhou, J. Peng, **Q. Liu**; Action-dependent Control Variates for Policy Optimization via Stein Identity. *International Conference on Learning Representation (ICLR)*. 2018

J. Guan, Y. Liu, **Q. Liu**, J. Peng; Energy-efficient Amortized Inference with Cascaded Deep Classifiers. *AAAI Conference on Artificial Intelligence (AAAI)*. 2018

J. Chen, J. Peng, **Q. Liu**; Efficient Localized Inference for Large Graphical Models. *International Joint Conference on Artificial Intelligence(IJCAI)*. 2018

Q. Liu; Stein variational gradient descent as gradient flow. *Advances in Neural Information Processing Systems (NIPS)*. 2017

T. Li, **Q. Liu**, X. Zhou; Ultra-Low Power Gaze Tracking for Virtual Reality. *ACM Conference on Embedded Networked Sensor Systems*. 2017

Y. Liu, P. Ramachandran, **Q. Liu**, J. Peng; Stein Variational Policy Gradient. *Uncertainty in Artificial Intelligence (UAI)*. 2017

Y. Feng, D. Wang, **Q. Liu**; Learning to Draw Samples with Amortized Stein Variational Gradient Descent. *Uncertainty in Artificial Intelligence (UAI)*. 2017
J. Han, **Q. Liu**; Stein Variational Adaptive Importance Sampling. *Uncertainty in Artificial Intelligence (UAI)*. 2017

Q. Liu, Lee; Black-box Importance Sampling. *AI and Statistics (AISTATS)*. 2017

Bertasius, **Liu**, Torresani, Shi; Local Perturb-and-MAP for Structured Prediction. *AI and Statistics (AISTATS)*. 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

Stein's Method for Practical Machine Learning: Bridging the Gap.
- *International Conference on Computational Statistics (COMPSTAT)*, August, 2018
- *Machine Learning Theory Workshop, Peking University*, June, 2018
- *International Purdue Symposium on Statistics and Celebration of the 50th Anniversary of the Department of Statistics*, June, 2018
- *SAMSI workshop on Monte Carlo sampling algorithms*, December, 2017
- *11th International Conference on Monte Carlo Methods and Applications*, July, 2017
- *39th Annual ISMS Marketing Science Conference, USC*, 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

Message Passing for Estimation and Decision in Graphical models.
- *AAAI 2018 Workshop on Planning and Inference, Feb, 2018*

Distributed Learning, Exponential Families, Information Loss.
- *International Chinese Statistical Association (ICSA), Canada*, August, 2017

Learning to Draw Samples: With Application to Amortized MLE for Generative Adversarial Training.
- *NIPS Bayesian Deep Learning Workship*, 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

Distributed Learning, Exponential Families, Information Loss.
- *AI/ML Seminar, Department of Computer Science, UC Irvine*, November, 2014

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