Jinlin Lai

PhD Candidate · Manning College of Information and Computer Sciences

University of Massachusetts Amherst, 140 Governors Dr., Amherst, MA 01002

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Education

University of Massachusetts Amherst *Amherst, MA, United States*

PhD in Computer Science *Aug 2020 - 2026 (expected)*

- Advisor: Dr. Daniel R. Sheldon
- Area: Probabilistic machine learning, computational statistics and Bayesian inference

University of Massachusetts Amherst *Amherst, MA, United States*

MS in Computer Science *Aug 2020 - Feb 2024*

- GPA (core): 4.0/4.0
- Courses (PhD level):
  - CS: Machine Learning, Optimization in Computer Science, Probabilistic Graphical Models, Advanced Algorithms, Compiler Techniques, Advanced Natural Language Processing
  - Math: Real Analysis I, Numerical Analysis I

Tsinghua University *Beijing, China*

B.Eng. of Computer Science and Technology *Aug 2016 - June 2020*

- Minors in Finance and Entrepreneurship
- Undergrad research advisors: Dr. Dan Pei, Dr. Jiaxing Song
- GPA: 3.67/4.0
- Selected Courses: Experiments in Mathematics, Fundamentals of Search Engine Technology, Game Theory, Introduction to Principles of Communications, Stochastic Mathematical Methods, Theory and Methods for Statistical Inference

Work Experience

Basis AI Institute *New York, NY*

Summer Research Intern *June 2025 - August 2025*

- Worked with Dr. Rafal Urbaniak and Dr. Jack Feser.
- Research in multi-modal causal modeling and contribute to open-sourced libraries.

Flatiron Institute, Simons Foundation *New York, NY*

Summer Pre-Doctoral Researcher *May 2024 - August 2024*

- Worked with Dr. Yuling Yao.
- Research in statistical methods for scientific simulators, with applications to biological and cosmological problems.

Dolby Laboratories Inc. *Sunnyvale, CA*

ATG Imaging Research Intern *June 2023 - August 2023*

- Worked with Dr. Anustup Choudhury and Dr. Guan-Ming Su.
- Research in conditional diffusion models and apply to neural rendering.

Publications

Preprint

Jinlin Lai*, Yuling Yao*. (2024). Predictive variational inference: Learn the predictively optimal posterior distribution. arXiv preprint arXiv:2410.14843. [link]

Conference

Max Hamilton*, **Jinlin Lai***, Wenlong Zhao, Subhransu Maji†, Daniel Sheldon†. (2025). Active Measurement: Efficient Estimation at Scale. In *Proceedings of the 39th Conference on Neural Information Processing Systems* (NeurIPS), to appear. [link]

Jinlin Lai, Daniel Sheldon, Justin Domke. (2024). Hamiltonian Monte Carlo Inference of Marginalized Linear Mixed-Effects Models. In *Proceedings of the 38th Conference on Neural Information Processing Systems* (NeurIPS), Vancouver, Canada. [link]

Jinlin Lai, Anustup Choudhury, Guan-Ming Su. (2024). Outdoor Scene Relighting with Diffusion Models. In *Proceedings of the 27th International Conference on Pattern Recognition* (ICPR), Kolkata, India. [link]

Jinlin Lai, Javier Burroni, Hui Guan, Daniel Sheldon. (2023). Automatically Marginalized MCMC in Probabilistic Programming. In *Proceedings of the 40th International Conference on Machine Learning* (ICML), Honolulu, Hawaii, USA. PMLR 202, 2023. [link]

Jinlin Lai, Justin Domke, Daniel Sheldon. (2022). Variational Marginal Particle Filters. In *Proceedings of the 25th International Conference on Artificial Intelligence and Statistics* (AISTATS) 2022, Valencia, Spain. PMLR: Volume 151. [link]

Haowen Xu, Wenxiao Chen, **Jinlin Lai**, Zhihan Li, Youjian Zhao, Dan Pei. 2020. Shallow VAEs with RealNVP Prior can Perform as Well as Deep Hierarchical VAEs. ICONIP.

Workshop

Aditya Parashar*, Aditya Vikram Singh*, Avinash Amballa*, **Jinlin Lai**, and Benjamin Rozonoyer. (2024). "Quasi-random Multi-Sample Inference for Large Language Models." In Frontiers in Probabilistic Inference: Learning meets Sampling. [link]

Jinlin Lai, Daniel Sheldon. 2022. Automatic Inference with Pseudo-Marginal Hamiltonian Monte Carlo. ICML workshop Beyond Bayes: Paths Towards Universal Reasoning Systems.

Jinlin Lai, Lixin Zou, Jiaxing Song. 2020. Optimal Mixture Weights for Off-Policy Evaluation with Multiple Behavior Policies. Offline Reinforcement Learning Workshop at Neural Information Processing Systems.

Services

Served as a reviewer for

- ICML 2022, 2025
- AISTATS 2023, 2024, 2025
- AABI 2023, 2024
- NeurIPS 2024, 2025
- ICLR 2025
- ACM SIGPLAN SLE 2025

Teaching Experience

Fall 2025	**Algorithms for Data Science**, Teaching Assistant	*University of Massachusetts Amherst*
Spring 2025	**Introduction to Computation**, Teaching Assistant	*University of Massachusetts Amherst*
Fall 2024	**Advanced Algorithms**, Teaching Assistant	*University of Massachusetts Amherst*
Spring 2024	**Probabilistic Graphical Models**, Teaching Assistant	*University of Massachusetts Amherst*
Spring 2023	**Probabilistic Graphical Models**, Teaching Assistant	*University of Massachusetts Amherst*
Spring 2022	**Probabilistic Graphical Models**, Teaching Assistant	*University of Massachusetts Amherst*
Summer 2019	**Algorithms for High School Olympics**, Lecturer	*Nanchang, Jiangxi Province, China*
Summer 2018	**Algorithms for High School Olympics**, Lecturer	*Ganzhou, Jiangxi Province, China*
Summer 2017	**Algorithms for High School Olympics**, Lecturer	*Ganzhou, Jiangxi Province, China*

Talks

Jinlin Lai. 2023. Automatically Marginalized MCMC in Probabilistic Programming. Contributed talk in *the 5th Symposium on Advances in Approximate Bayesian Inference*.

Skills

Programming: Python, C/C++, LaTeX, Tensorflow, Tensorflow-Probability, JAX, NumPyro, PyTorch

Language: Chinese (Native), English (Professional), Japanese (Elementary)

Honors, & Awards

2017 **Academic Excellence Scholarship**, Tsinghua University *CNY 5,000*

2016 **Second Prize, Freshman Scholarship**, Tsinghua University *CNY 20,000*

2015 **Gold Medal, National Olympiad in Informatics**, China
Gold Medal, Asia and Pacific Informatics Olympiad, China