

Kate Lin

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EDUCATION

Wellesley College *

Bachelor of Arts in Computer Science | CS GPA: 3.8

Wellesley, MA

Aug 2017 – May 2021

Massachusetts Institute of Technology ◊

Cross Registered Student | CS GPA: none due to COVID

Cambridge, MA

Aug 2017 – May 2021

Oxford University - Worcester College ◊

Visiting Student | CS GPA: 4.0

Oxford, UK

Sep 2019 – Dec. 2019

Selected Coursework: Probabilistic Systems Analysis ◊ Probabilistic Model Checking ◊ Intro to Machine Learning ◊ Intro to Algorithms ◊ Advanced Linear Algebra ◊ Combinatorics and Graph Theory * Data Structures * Machine Organization ◊ Computational Cognitive Science ◊

RESEARCH WORK & EXPERIENCE

Student Researcher

Aug 2020 – Jan 2021

Software Engineering Intern

May 2020 - Aug 2020

Google AI

San Francisco, CA

On Tensorflow Probability team researching automatic structured variational inference (ASVI).

- Developed and implemented new method of automatically structuring surrogate posteriors for variational inference, allowing for performant and easier-to-use VI.
- Ran experiments and analyzed results to show that ASVI's performance matches or exceeds that of baseline surrogate posteriors (mean-field, multivariate Normal, and normalizing flows) with minimal tuning on a range of inference tasks. Paper accepted to AISTATS.
- Developed new method of using ASVI as a preconditioner for Markov Chain Monte Carlo sampling. Built experimental pipeline comparing ASVI-preconditioned and non-preconditioned HMC on a range of inference tasks.
- Developed a Brownian motion model for TFP's Inference Gym.
- Implemented the Weibull distribution.

Undergraduate Research Assistant

Feb 2020 – Oct 2020

MIT CSAIL Computer Aided Programming Group

Cambridge, MA

Worked on methods for active discovery of causal probabilistic programs:

- Designed and built Causal Inductive Synthesis Corpus (CISC), a suite of interactive problems designed for causal discovery for both agents & humans. (JavaScript, Elm, Autumn)
- Built web interface v1.0 with logging and replay functionalities for humans to interact with CISC problems and learn causal mechanisms. (Elm)
- Built Autumn to JavaScript transpiler to decrease latency of CISC interface. (Julia)
- PI: Armando Solar-Lezama - Direct Supervisor: Zenna Tavares

Engineering Practicum Intern

May 2019 – Aug 2019

Google AI

New York City, NY

In the Structured Data Research Group working on computational journalism.

- Developed reading comprehension BERT model using Tensorflow to generate interesting questions given textual information, trained on SQuAD (Stanford Question Answering Dataset). (C++ / Python)
- Gave talk on my research work at Google Women Engineers conference to 600+ engineers (selected out of 30+ proposals).
- Built and tested new product that utilizes machine learning, natural language processing, and information retrieval techniques to increase news engagement and literacy.(C++)

Undergraduate Research Assistant

Sep 2018 – May 2019

MIT Computational Cognitive Science Group

Cambridge, MA

Developed computational models for visual processing of bodies and poses in the brain:

- Modified SURREAL (Synthetic hUmans foR REAL tasks) generative model software utilizing LSUN dataset and SMPL generated body models to develop images of bodies in different poses and locations that are difficult to discriminate by both computers and humans. (Python)
- PI: Josh Tenenbaum - Direct Supervisor: Ilker Yildirim

PAPERS

Automatic Structured Variational Inference

Ambrogioni, L., **Lin, K.**, Fertig, E., Vikram, S., Hinne, M., Moore, D., van Gerven, M.

AISTATS 2021

Causal Inductive Synthesis Corpus

Tavares, Z., Das, R., Weeks, E., **Lin, K.**, Tenenbaum, J.B., Solar-Lezama, A.

NeurIPS 2020 Workshop on Computer-Assisted Programming

Cross-Subject EEG Event-Related Potential Classification for Brain-Computer Interfaces Using Residual Networks

Pereira, A., Padden, D., Jantz, J., **Lin, K.**, Alcaide-Aguirre, R.

White Paper

AWARDS

Weissman Foundry Fellowship

Oct 2020

- Awarded \$750 grant for independent project on Brain Computer Interface wearables.

MIT ProjX Grant

Oct 2020

- Awarded \$500 grant for independent project on Brain Computer Interface wearables.

CRA-WP GHC Research Scholar

Oct 2019

- Selected by Computing Research Association to attend Grace Hopper Conference as a Research Scholar.

MIT Battlecode Programming Competition 3rd Place

Jan 2019

- Place 3rd in first-time competitors pool for developing algorithms in JavaScript to dynamically control fleet of virtual robots in competition against other fleets of virtual robots.

TECHNICAL SKILLS

Languages: Python, Java, C/C++, Julia, Elm

Frameworks: Node.js

Developer Tools: Git

Libraries: TensorFlow, PyTorch, NumPy/SciPy