Kate Lin

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EDUCATION

Wellesley College * Wellesley, MA
Bachelor of Arts in Computer Science | CS GPA: 3.73 *Aug 2017 – May 2021*

Massachusetts Institute of Technology ◇ Cambridge, MA
Cross Registered Student | CS GPA: none due to COVID *Aug 2017 – May 2021*

Oxford University - Worcester College ⊙ Oxford, UK
Visiting Student | CS GPA: 4.0 *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 – Present
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 submitted to AISTATS.
- 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.*
in submission at AISTATS

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