Eric Zhao

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EDUCATION

University of California, Berkeley 2021-2026
Ph.D., Computer Science. Incoming student.

- Studying the theory & methods of machine learning, with the goal of making ML systems more robust to real-world conditions and game-theoretic effects.
- Co-advised by Michael I. Jordan & Nika Haghtalab in the Berkeley AI Research lab.

California Institute of Technology 2016-2020
B.S., Computer Science, 2020. GPA: 3.9/4.0.

- Research topics: interactive machine learning (advised by Profs. Yisong Yue, Anima Anandkumar) and matching markets (advised by Prof. Adam Wierman).
- Teaching Assistant: *CS155: Machine Learning and Data Mining* (Yisong Yue, 2019-20), *CS144: Network Structures and Economics* (Adam Wierman, 2019-20).
- Graduate-level courses in probability, linear algebra, linear analysis, statistical learning, statistical inference, machine learning (4-course track), reinforcement learning.

PUBLICATIONS

Eric Zhao, Anqi Liu, Animashree Anandkumar, Yisong Yue. "*Active Learning under Label Shift*," to appear at the 2021 International Conference on Artificial Intelligence and Statistics (AISTATS), April 2021. Also presented at the Workshop on Real World Experiment Design and Active Learning at ICML 2020. Arxiv link, open-source link.

Eric Zhao, Alex Trott, Caiming Xiong, Stephan Zheng. "*ERMAS: Learning Policies Robust to Reality Gaps in Multi-Agent Simulations*," submitted to the 2021 International Conference on Machine Learning (ICML), Feb. 2021. Preprint link.

Eric Zhao, Erich Liang, Adam Wierman, Laura Doval, Federico Echenique. "*Incentivizing Participation in School Choice Programs*," presented (poster) at 2019 Carver Mead Symposium. Best Poster Presentation at 2019 Caltech Meeting of the Minds.

Eric Zhao, Julian Bunn. "*Recurrent Neural Architectures for Botnet Detection*," short technical report, June 2017. Microsoft Azure Research Award.

INDUSTRY EXPERIENCE

Nvidia Research: Part-Time Research Intern, AI Algorithms Jan. 2020 - Present

- Developing scalable methods for mitigating bias in machine learning models.

Salesforce Research: Research Intern, Deep Learning June 2020 - Oct. 2020

- Proposed a novel robustness objective for multi-agent reinforcement learning and efficiently solved its dual with a novel policy gradient algorithm.
- Ran large-scale deep reinforcement learning experiments (PyTorch, RLLib).
- First-author of research paper and Salesforce patent no. 63/087,067 on my work.

Uber ATG: Software Engineering Intern, Computer Vision June - Sept. 2019

- Developed robust depth estimation algorithms for self-driving cars (C++, Eigen).
- Extended blockage localization range by up to 20% with joint stereo vision+LiDAR.
- Implemented my models on real autonomous vehicles and oversaw live track tests.

Google Inc.: Software Engineering Intern, Cloud AI April - June 2019

- Designed and implemented reinforcement learning framework that teaches error-handling to autonomous dialogue agents (Tensorflow, TF-Agents).
- Improved error detection rates by >10% by repurposing active learning methods.
- Investigated use of weakly supervised human feedback for learning "on the long tail".

Bloomberg LP: Software Engineering Intern June - Aug. 2018

- Developed anomaly detection models for financial analytics (Spark, Scala, Kafka).
- Introduced mechanisms for 3+ new error classes, reduced model latency by 50%.

Hive LLC: NLP Intern Oct. 2017

- Implemented Seq2Seq language models, deployment pipelines (ParlAI, PyTorch).

RESEARCH EXPERIENCE

Caltech Decision, Optimization and Learning Jan. 2019 - June 2020

- Investigated the effects of distribution shift on active learning algorithms with Profs. Yisong Yue and Anima Anandkumar. My work led to publication.
- Investigated imitation learning and learning-to-search algorithms; explored the use of hierarchical imitation learning for efficient Sim2Real adaptation.

Caltech Rigorous Systems Research Group June 2018 - Oct. 2019

- Researched the effects of private schools on public school lotteries.
- With Prof. Adam Wierman, employed mean field theory and game theory to analyze how susceptible different lottery designs are to private school influence.
- Ran case-study with a California school district; we improved matching rates by 10%.

Caltech Center for Data Driven Discovery March - June 2017

- Researched recurrent neural networks for botnet detection with Dr. Julian Bunn.
- Analyzed botnets (Wireshark), designed & finetuned neural networks (Tensorflow).

STARTUP EXPERIENCE

Hard Valuable Fun (HVF) Intern Nov. - Dec. 2018

- Explored idea to develop credit cards that reward patronage of local restaurants; mentored by Max Levchin (Affirm, Paypal cofounder) and Benjamin Jun (HVF).

Whimmly Inc. Cofounder (CEO) Nov. 2017 - May 2018

- Cofounded startup building "personal shopper" bots for eCommerce websites.
- Led team of 4, built a MVP, ran storefront tests with clients incl. a Fortune 500.
- Accepted into MassChallenge accelerator (<10% acceptance), achieved 3x industry-average consumer engagement, semifinalist in Harvard's 2018 Innovation Challenge.

Brewgorithm, An Anheuser-Busch Company, Cofounder (CDO) June - Oct. 2017

- Cofounded startup automating market analysis for the "long-tail" of alcohol products; joined Anheuser-Busch (AB) accelerator after winning pitch competition as intern.
- Built proof-of-concept using NLP data from recently acquired craft beer review site.
- Raised follow-on round, exited back to AB ($100-750k in internal funding).

SERVICE

Conference Reviewer for AIStats 2021, ICML 2021

Council Member 2018-19, Caltech CMS Partners Advisory Council
Organized networking dinners and other industry events for Caltech students.

President 2013-16, Youth Competitive Programming Circle (501(c)(3) org.)
Cofounded a non-profit org developing CS education materials for underfunded schools & libraries and running "Minecraft coding" bootcamps at 10+ schools.