

Eric Zhao

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SUMMARY

I'm a 3rd year CS PhD student at UC Berkeley, where I'm a member of the Berkeley AI Research Lab (BAIR) and the Theory Group. My research develops algorithms and mathematical foundations for multi-objective machine learning. I am particularly interested in multi-objective learning as a means of (1) understanding the emergent capabilities of large language models and (2) designing automated decision-making systems in marketplaces and other multi-agent environments.

EDUCATION

University of California, Berkeley 2021-2026
Ph.D., Computer Science. GPA 3.9/4.

Co-advised by Profs. Nika Haghtalab & Michael I. Jordan. Simons Institute visitor (2022 Learning & Games program). Courses in statistics, optimization, learning theory.

California Institute of Technology 2016-2020
B.S., Computer Science. GPA 3.9/4.

Advisors: Profs. Adam Wierman & Yisong Yue. Teaching assistant for CS/EE 144 (algorithmic economics, Prof. Wierman) and CS/EE 155 (machine learning, Prof. Yue).

PUBLICATIONS

[[Link](#)] **Eric Zhao***, Pranjal Awasthi, Nika Haghtalab. “*Open Problem: The Sample Complexity of Multi-Distribution Learning for VC Classes*,” May. 2023. In Proceedings of the 36th Annual Conference on Learning Theory (COLT 2023). * Originally alphabetical ordering.

[[Link](#)] **Eric Zhao***, Nika Haghtalab, Michael I. Jordan. “*A Unifying Perspective on Multi-Calibration: Unleashing Game Dynamics for Multi-Objective Learning*,” Feb. 2023. In Proceedings of the 37th Annual Conference on Neural Information Processing Systems (Neurips). * Originally alphabetical ordering.

[[Link](#)] **Eric Zhao***, Nika Haghtalab, Michael I. Jordan. “*On-Demand Sampling: Learning Optimally from Multiple Distributions*,” May. 2022. In Proceedings of the 36th Annual Conference on Neural Information Processing Systems (NeurIPS). *Outstanding Paper award*. * Originally alphabetical ordering.

[[Link](#)] **Eric Zhao**, Alex Trott, Caiming Xiong, Stephan Zheng. “*Learning to Play General-Sum Games Against Multiple Boundedly Rational Agents*,” Jan. 2021. In Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI).

[[Link](#)] **Eric Zhao**, Anqi Liu, Animashree Anandkumar, Yisong Yue. “*Active Learning under Label Shift*,” April 2021. In Proceedings of The 24th International Conference on Artificial Intelligence and Statistics (AISTATS). Also appeared at the ICML 2020 Workshop on Real World Experiment Design and Active Learning.

WORKING PAPERS

Eric Zhao, Pranjal Awasthi, Zhengdao Chen, Sreenivas Gollapudi, Daniel Delling. “*Semantic Routing via Autoregressive Modeling*,” under review, Feb. 2024.

[[Link](#)] Naman Agarwal, Pranjal Awasthi, Satyen Kale, **Eric Zhao***. “*Stacking as Accelerated Gradient Descent*,” under review, Feb. 2024. * Alphabetical ordering.

Eric Zhao*, Emilio Calvano, Nika Haghtalab, Ellen Vitercik. “*When Market Friction Increases User Engagement: Incentivizing Investment in Future Interactions*,” under review, Feb. 2024. * Originally alphabetical ordering.

Eric Zhao, Tatjana Chavdarova, Michael I. Jordan. “*Learning Variational Inequalities:*

Generalization Bounds and Applications to Empirical Games,” under review, Oct. 2023.

[[Link](#)] **Eric Zhao**, De-An Huang, Hao Liu, Zhiding Yu, Anqi Liu, Olga Russakovsky, Anima Anandkumar. “*Scaling Bias Mitigation with Multiple Fairness Tasks and Multiple Protected Attributes,*” technical report, Sept. 2021.

AWARDS

NSF Graduate Research Fellowship (GRFP) (2023)
Neurips Outstanding Paper Award (2022)
Google BAIR-Commons Award (2022)
Hertz Fellowship Semi-Finalist (2021)
Microsoft Azure Research Award (2017)

EXPERIENCE

Google Research: Student Researcher May. 2023 - Present

- Trained large language models (LLM) on customized routing tasks (Google Maps). Conducted theoretical analysis of the LLM training technique of “stacking”.

Salesforce Research: Research Intern June - Sept. 2020; Sept. - Dec. 2021

- Ran deep reinforcement learning experiments on finding robust and near-optimal tax policies in simulated trade-and-barter economies.

Nvidia Research: Research Intern Feb. 2021 - June. 2021

- Ran computer vision experiments on flaws in machine learning bias mitigation methods and studied alternatives for intersectional & label-scarce settings.

Uber: Self-Driving Engineering Intern June - Sept. 2019

- Developed safety-critical computer vision algorithms for Uber’s self-driving cars, extending blockage localization range by up to 20% in live track tests.

Google: Software Engineering Intern April - June 2019

- Prototyped in-conversation error-handling capabilities for Dialogflow chatbots.

Caltech: Student Researcher Dec. 2018 - June 2020

- Assisted case study on California school choice lottery that boosted match rates 10%.

Bloomberg LP: Software Engineering Intern June - Aug. 2018

- Developed anomaly detection algorithms for financial data,

STARTUPS

HVF Labs: Visitor Nov. - Dec. 2018

- Helped pilot credit card reward program with Max Levchin in his venture incubator.

Whimply Inc.: Cofounder Oct. 2017 - Mar. 2018

- Built chatbots for eCommerce sites inc. Fortune 500s; in MassChallenge accelerator.

Brewgorithm: Cofounder June - Oct. 2017

- Cofounded startup building recommendation engines for beverages/alcohol. Joined a ZX-Ventures accelerator, raised \$100-750k in seed funding from AB InBev SA/NV.

SERVICE

Reviewer/Sub-Reviewer: AISTats 2021, ICML 2021, Neurips 2022, ICLR 2022, ICML 2022 (Outstanding Reviewer award), ICML 2023.

Undergraduate Mentor: Mentored students in the Equal Access to Application Assistance (EAAA) Program and BAIR Undergraduate Mentorship Program. (2021-2023)

Volunteer Teacher: Served as a part-time computer science teacher at low income schools with Microsoft Philanthropy’s TEALS Program (2020-2021)

Volunteer Tutor: Served as a part-time computer science tutor with the non-profit org Youth Competitive Programming Circle. (2013-2016)