Zhongyuan Liang

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EDUCATION

University of California, Berkeley Sep 2023 - Present
Ph.D., Computational Precision Health *GPA: 4.00/4.00*
Advisors: Irene Chen, Ahmed Alaa

University of Toronto Sep 2019 - June 2023
B.S. Computer Science, Statistics *GPA: 4.00/4.00*

RESEARCH EXPERIENCE

C.H.E.N. Lab, University of California, Berkeley Sep 2023 - Present
Advisor: Irene Chen

- Led project revealing latent data bias in treatment modeling due to medication non-adherence; developed pipeline using LLMs to extract adherence information from clinical notes, improving model validity and promoting health equity; work published at Conference on Health, Inference, and Learning (CHIL) 2025.
- Collaborating with *Samsung Research* team to develop multimodal ICU risk prediction models integrating wearable device data and EHRs, enabling more accurate early warning for critical clinical events.

Alaa Lab, University of California, Berkeley Jan 2024 - Present
Advisor: Ahmed Alaa

- Led research in identifying latent biases in machine learning-based treatment effect estimation; developed a hybrid meta-learner for robust conditional treatment effect estimation across diverse observational settings; work under review.
- Collaborating with *UCSF cardiologists* to develop an LLM agent for adjudicating heart failure with preserved ejection fraction (HFpEF) diagnoses by integrating clinical notes, demonstrating improved performance over current clinical scoring systems.

Yu Group, University of California, Berkeley Jan 2024 - Present
Advisor: Bin Yu

- Worked with a multidisciplinary research team to develop an interpretability method for tree-based models that more reliably identifies signal features and improves stability, enabling more trustworthy and personalized interpretation in high-stakes domains such as healthcare; work under review.

ML and Computational Health Care Group, University of Toronto May 2022 - Jan 2023
Advisor: Rahul G. Krishnan

- Contributed to developing robust statistical methods for detecting covariate shifts in machine learning models across settings (e.g., between hospitals), achieving state-of-the-art performance; published at ICLR 2023.

PUBLICATIONS

$*$ denotes equal contribution.

1. **Zhongyuan Liang**, Lars van der Laan, Ahmed Alaa. **Hybrid Meta-learners for Estimating Heterogeneous Treatment Effects**. Under review, 2025.

2. **Zhongyuan Liang***, Zachary T. Rewolinski*, Abhineet Agarwal, Tiffany M. Tang, Bin Yu. **Local MDI+: Local Feature Importances for Tree-Based Models**. Under review, 2025.

3. **Zhongyuan Liang**, Arvind Suresh, Irene Y. Chen. **Revealing Treatment Non-Adherence Bias in Clinical Machine Learning Using Large Language Models**. In: Conference on Health, Inference, and Learning (CHIL), 2025.

4. Tom Ginsberg, **Zhongyuan Liang**, Rahul G. Krishnan. **A Learning Based Hypothesis Test for Harmful Covariate Shift**. In: International Conference on Learning Representation (ICLR), 2023.

5. Mohi Reza, Angela Zavaleta Bernuy, Emmy Liu, Tong Li, **Zhongyuan Liang**, Calista K Barber, Joseph Jay Williams. **Exam Eustress: Designing a Brief Online Intervention for Helping Students Identify Positive Aspects of Stress**. In: ACM Conference on Human Factors in Computing Systems (CHI), 2023.

ACADEMIC SERVICE

Conference Reviewer

- NeurIPS, ICLR, FAccT, MLHC, ML4H 2024 - 2025

Invited Talks

- *(Upcoming)* **Invited Speaker**, *NLP and Language Models in Healthcare*, Health Applications Society (HAS) session, INFORMS Annual Meeting 2025, Atlanta Oct 2025

Graduate Student Instructor, University of California, Berkeley

- *(Upcoming)* Data102 Data, Inference, and Decisions Fall 2025

Teaching Assistant, University of Toronto

- CSC236 Introduction to the Theory of Computation Fall 2021
- CSC263 Data Structure & Analysis Winter 2022
- MAT135 Calculus I Fall 2020, Fall 2022
- MAT136 Calculus II Winter 2021, Fall 2021, Winter 2022
- PHL245 Modern Symbolic Logic Winter 2023, Winter 2022, Fall 2022

SCHOLARSHIP & AWARDS

- Department of Computer Science Research Award 2021 - 2022
  Awarded to fund a summer research internship in Computer Science, University of Toronto
- Nomination of TATP Teaching Excellence Award 2021 - 2022
  Nominated by students for teaching excellence as Teaching Assistant
- Robert Bruce In-Course Scholarship 2021 - 2022
  Awarded for top academic achievement at New College, University of Toronto
- New College Council In-Course Scholarship 2020 - 2021
  Awarded in recognition of academic excellence at New College, University of Toronto
- Faculty of Arts & Science Alumni & Friends Undergraduate Scholarship 2019 - 2020
  Recognized for academic excellence in the Faculty of Arts & Science, University of Toronto
- Dean's List Scholar in the Faculty of Arts & Science 2019 - 2022
  Awarded on the basis of GPA, University of Toronto

SKILLS

- **Programming & Tools**: Python, SQL, NumPy, Pytorch, Hugging Face, Pandas, Git, LaTeX
- **Research**: Machine Learning, Deep Learning, Healthcare, LLMs, Causal Inference, Interpretability