Chenhao Zhang

chenhao4@andrew.cmu.edu • 530-400-0112

Education

M.S. Machine Learning *2023-12/2024 (expected)*
Carnegie Mellon University, Pittsburgh
Relevant Coursework:
Probabilistic Graphical Model, Advanced Deep Learning, Advanced Introduction to Machine Learning, Convex Optimization, Intermediate Statistics

B.S. Computer Science and B.S. Mathematics *2020-2023*
University of Michigan, Ann Arbor **GPA**: 3.9/4.0
Graduated with Honors
Relevant Coursework:
Fourier Analysis, Ordinary Differential Equations, Abstract Algebra, Combinatorics, Linear Optimization, Probability, Theoretical Statistics, Machine Learning, Artificial Intelligence, Computer Vision, Deep Learning for Computer Vision, Database Management System

B.S Computer Science *2018-2019*
University of California, Davis **GPA**: 3.94/4.0

Experience

Independent Study *09/2023-present*
Carnegie Mellon University | Prof. Barnabas Poczos
- Combine meta learning with guided diffusion model for molecule optimization.
- Apply computer vision techniques to molecule optimization using small data.
- Apply non-differentiable chemistry software to guided diffusion model for molecule optimization (*published at ICML AI4Science workshop*).

Independent Study *06/2023-present*
Carnegie Mellon University | Prof. Pradeep Ravikumar
- Conduct literature review in representation learning theory, causal inference, and concept learning.
- Investigate limitations of LLM and sequential models, explore in-context learning on tabular data.

Research Assistant *02/2021-04/2023*
Michigan Traffic Lab | Dr. Henry Liu
- Develop a traffic data processing platform, unifying raw vehicle trajectory and map data into spatial-temporal traffic state matrices (*published in Transportation Research Record*).
- Work on projects with Michigan Traffic Operation Center to implement real-time traffic data processing and optimization framework, reducing traffic congestion in Oakland County by 3%-20%. Apply probabilistic models to estimate and predict traffic states from low-penetration traffic data. (*published in Nature Communications*)

Co-Founder *01/2021-08/2021*
WaiLi Game Group
- Use Unity to design and implement an RPG game *Camia* with a diverse student team. Prepare business and marketing plans for product launch.

Publications

- (Equal contribution) Yuchen Shen*, Chenhao Zhang*, Chenghui Zhou, Sijie Fu, Newell Washburn, Barnabas Poczos (2024). Non-Differentiable Diffusion Guidance for Improved Molecular Geometry. *ICML AI4Science Workshop*.
- Xingmin Wang, Zachary Jerome, Zihao Wang, Chenhao Zhang, Shengyin Shen, Vivek Kumar, Fan Bai, Paul Krajewski, Danielle Deneau, Ahmad Jawad, Rachel Jones, Gary Piotrowicz, Henry X. Liu (2024). Traffic Light Optimization with Low Penetration Rate Vehicle Trajectory Data. *Nature Communications* 15, Article number: 1306.
- Xingmin Wang, Zachary Jerome, Chenhao Zhang, Shengyin Shen, Vivek Vijaya Kumar, Henry X. Liu (2023). Trajectory Data Processing and Mobility Performance Evaluation for Urban Traffic Networks. *Transportation Research Record* 2677(3).

Skills

Coding: C/C++, C#, Python, SQL, Java, JavaScript, HTML & CSS, R, MATLAB
Language: Chinese (Mandarin), English

Talks

- "Arterial Mobility Performance Evaluation Using the Connected Vehicle Trajectory Data."
  University of Michigan Transportation Research Institute Research Symposium. August 2021.

Honors & Awards

Dean's List *03/2019, 06/2019*
University of California, Davis

University Honors *2020, 2021, 2022*
University of Michigan, Ann Arbor

EECS Scholars *2021, 2022*
University of Michigan, Ann Arbor

James B. Angell Scholar *03/2022*
University of Michigan, Ann Arbor