

Jiachen (Amber) Liu

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EDUCATION

University of Michigan

Ann Arbor, MI

Ph.D. Candidate in Computer Science

Aug 2020 - Present

- Advisors: Prof. Mosharaf Chowdhury
- GPA:3.94/4.00
- **Awards:** Ph.D. Student Fellowship (Umich). ML and Systems Rising Stars (Program of 2023)

B.S.E. in Data Science

Sep 2018 - May 2020

- GPA:3.82/4.00, Minor in Mathematics
- **Honors/Awards:** Dean's List (2018), Dean's List (2019), 2019 University Honors

Shanghai Jiao Tong University (SJTU)

Shanghai, China

B.S. in Electrical Computer Engineering

Sep 2016 - Aug 2020

- **Honors/Awards:** Shanghai Outstanding Graduate(Top 5%), Best Technology Award in Design Expo (2017), Distinguished Academic Achievement Award, Dean's List (Top 5%, 2017-2018), Undergraduate Scholarship

Massachusetts Institute of Technology

Cambridge, MA

Visiting researcher in EECS CSAIL

May 2019 - Jan 2020

PUBLICATION

1. Fluid: A Generic Resource-aware Hyperparameter Tuning Execution Engine. (*Equal contribution). In *MLSys 2021*.
Jiachen Liu*, Peifeng Yu*, Mosharaf Chowdhury.
2. FedScale: Benchmarking Model and System Performance of Federated Learning. In *ICML 2022*.
Fan Lai, Yinwei Dai, Sanjay Singapuram, **Jiachen Liu**, Xiangfeng Zhu, Harsha Madhyastha, Mosharaf Chowdhury.
3. Auxo: Efficient Federated Learning via Scalable Cohort Identification. In *SoCC 2023*.
Jiachen Liu, Fan Lai, Yinwei Dai, Aditya Akella, Harsha Madhyastha, Mosharaf Chowdhury.
4. Venn: Resource Management Across Federated Learning Jobs. *arXiv:2312.08298*.
Jiachen Liu, Ding Ding, Fan Lai, Yiwen Zhang, Mosharaf Chowdhury.
5. Efficient Large Language Models: A Survey. *Transactions on Machine Learning Research*
Zhongwei Wan, Xin Wang, Che Liu, Samiul Alam, Yu Zheng, **Jiachen Liu**, Zhongnan Qu, Shen Yan, Yi Zhu, Quanlu Zhang, Mosharaf Chowdhury, Mi Zhang.
6. FedTrans: Efficient Federated Learning for Heterogeneous Clients via Model Transformation. *MLSys 2024*.
Yuxuan Zhu, **Jiachen Liu**, Fan Lai, Mosharaf Chowdhury.
7. Andes: Defining and Enhancing Quality-of-Experience in LLM-Based Text Streaming Services, *Arxiv 2024*.
Jiachen Liu, Zhiyu Wu, Jae-Won Chung, Fan Lai, Myungjin Lee, Mosharaf Chowdhury.
8. IaC-Eval: A code generation benchmark for Infrastructure-as-Code programs, *Under Submission*.
Patrick Tser Jern Kon, **Jiachen Liu**, Yiming Qiu, Weijun Fan, Ting He, Lei Lin, Haoran Zhang, Owen M. Park, George Sajan Elengikal, Yuxin Kang, Ang Chen, Mosharaf Chowdhury, Myungjin Lee, Xinyu Wang.

WORK EXPERIENCE

University of Michigan, Graduate Student Research Assistant

Area: Machine Learning Systems

Aug 2020 - Now

Apple, PhD Intern

Area: Private Machine Learning

May 2022 - Aug 2022

Meta, Research Scientist Intern

Area: Large Language Model Training

May 2024 - Now

Teaching Experience

University of Michigan, EECS, *Graduate Student Instructor* for EECS 598 Systems for GenAI Jan 2024 - May 2024

University of Michigan, EECS, *Instructional Aide* for EECS 484 Database Systems Sep 2019 - Jul 2020

COMMUNITY SERVICE

University of Michigan, EECS, *DEI Chair of CSE Graduate Student Organization* May 2023 - Present

Student Union of Joint Institute in Shanghai Jiaotong University, *Vice President* Jun 2017 - Aug 2018

- Coordinated the work of the various departments under Student Union to ensure the division of labor and cooperation.

RESEARCH EXPERIENCES

Large Language Models (LLM) Energy Leaderboard *Advisor: Prof. Mosharaf Chowdhury* July 2023 - Now

- Developed an evaluation tool that quantifies and ranks the energy consumption of LLMs.
- Implemented an online interactive system allowing users to compare the generated content and energy efficiency of different LLMs, thereby understanding trade-offs between performance and energy consumption.
- <https://ml.energy/leaderboard/>

FedScale: A Scalable and Extensible Federated Learning (FL) Benchmark

Advisor: Prof. Mosharaf Chowdhury

Feb 2021 - Now

- Created a platform capable of simulating the behavior of millions of user devices, thereby allowing FL developers to evaluate the performance of their FL applications.
- Collected and formatted the largest benchmarking dataset for various FL tasks, focusing on various challenges like data heterogeneity, device heterogeneity, and connectivity conditions.

High-dimensional Data Index: Adaptive Product Quantization Supporting Data Streaming

Advisor: Prof. Samuel Madden, MIT

May 2019 - Jan 2020

- Proposed an ANN (appropriate nearest neighbor) search model based on product quantization (PQ) to support fast ANN searches in high dimensional scalable dynamic databases with high query speed and high accuracy simultaneously.

COMPUTER SKILLS

Skill: C++ (Proficient), Python (Proficient), SQL (Proficient), R (Proficient), Matlab (Proficient), C, HTML, Java