Jiachen (Amber) Liu

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EDUCATION

University of Michigan (U of M) — Ann Arbor, MI

Ph.D.Candidate in Computer Science; Advised by Prof. Mosharaf Chowdhury — Aug 2020 - Apr 2025

- **Honors:** Ph.D. Student Fellowship (U of M). ML and Systems Rising Stars (Program of 2023)

B.S.E. in Data Science, Minor in Mathematics — Sep 2018 - May 2020

- **Honors:** 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:** Shanghai Outstanding Graduate (Top 5%), Dean's List (Top 5%), Undergraduate Scholarship (Top 10%)

Massachusetts Institute of Technology — Cambridge, MA

Visiting researcher at EECS CSAIL, Advised by Prof. Samuel Madden — May 2019 - Jan 2020

PUBLICATION

(* = equal contribution)

1. Sci-Reasoning: A Dataset Decoding AI Innovation Patterns. Arxiv 2026.

   Jiachen Liu*, Maestro Harmon*, Zechen Zhang.
2. User-Centric Machine Learning Systems. PhD Dissertation 2025.

   Jiachen Liu
3. EXP-Bench: Can AI Conduct AI Research Experiments? Arxiv 2025.

   Patrick Kon*, **Jiachen Liu***, Xinyi Zhu, Qiuyi Ding, Jingjia Peng, Jiarong Xing, Yibo Huang, Yiming Qiu, Jayanth Srinivasa, Myungjin Lee, Mosharaf Chowdhury, Matei Zaharia, Ang Chen.
4. Curie: Toward Rigorous and Automated Scientific Experimentation with AI Agents. Arxiv 2025.

   Patrick Kon*, **Jiachen Liu***, Qiuyi Ding, Yiming Qiu, Zhenning Yang, Yibo Huang, Jayanth Srinivasa, Myungjin Lee, Mosharaf Chowdhury, Ang Chen.
5. 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.
6. Venn: Resource Management Across Federated Learning Jobs. MLSys 2025.

   Jiachen Liu, Ding Ding, Fan Lai, Yiwen Zhang, Mosharaf Chowdhury.
7. Fluid: A Generic Resource-aware Hyperparameter Tuning Execution Engine. MLSys 2021.

   Jiachen Liu*, Peifeng Yu*, Mosharaf Chowdhury.
8. The ML.ENERGY Benchmark: Toward Automated Inference Energy Measurement and Optimization. NeurIPS 2025. (Spotlight)

   Jae-Won Chung, **Jiachen Liu**, Jeff Ma, Ruofan Wu, Oh Jun Kweon, Yuxuan Xia, Zhiyu Wu, Mosharaf Chowdhury
9. Evaluation Framework for AI Systems in "the Wild". Arxiv 2025.

   Sarah Jabbour, Trenton Chang, Anindya Das Antar, Joseph Peper, Insu Jang, **Jiachen Liu**, Jae-Won Chung, Shiqi He, Michael Wellman, Bryan Goodman, Elizabeth Bondi-Kelly, Kevin Samy, Rada Mihalcea, Mosharaf Chowdhury, David Jurgens, Lu Wang
10. IaC-Eval: A code generation benchmark for Infrastructure-as-Code programs. In NeurIPS 2024.

    Patrick 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.

11. FedTrans: Efficient Federated Learning for Heterogeneous Clients via Model Transformation. In MLSys 2024.
    Yuxuan Zhu, **Jiachen Liu**, Fan Lai, Mosharaf Chowdhury.
12. Efficient Large Language Models: A Survey. In TMLR 2024.
    Zhongwei Wan, Xin Wang, Che Liu, Samiul Alam, Yu Zheng, **Jiachen Liu**, Zhongnan Qu, Shen Yan, Yi Zhu, Quanlu Zhang, Mosharaf Chowdhury, Mi Zhang.
13. Auxo: Efficient Federated Learning via Scalable Cohort Identification. In SoCC 2023.
    Jiachen Liu, Fan Lai, Yinwei Dai, Aditya Akella, Harsha Madhyastha, Mosharaf Chowdhury.
14. 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.

WORK EXPERIENCE

Meta, Research Scientist

Area: LLM Pre- & Post-training Systems. Jun 2025 - Now

Meta, Research Scientist Intern / Part-time

Area: Llama Pre-training Systems. May 2024 - Dec 2024

Apple, PhD Intern

Area: Private Machine Learning Framework. May 2022 - Aug 2022

TEACHING EXPERIENCE

Graduate Student Instructor, EECS 598 Systems for GenAI (U of M) 2024 Winter

Teaching Assistant, EECS 484 Database Systems (U of M) 2019 Fall, 2020 Winter, 2020 Summer

COMMUNITY SERVICE

Computer Science Engineering Graduate Student Organization at U of M , *DEI Chair* May 2023 - Present

Student Union of Joint Institute at SJTU, *Vice President* Jun 2017 - Aug 2018

RESEARCH EXPERIENCES

Curie: Automated and Rigorous Scientific Experimentation with AI Agents

Advisor: Prof. Mosharaf Chowdhury, Porf. Ang Chen 2024 - Now

- Curie is the first AI-agent framework designed for automated and rigorous scientific experimentation. Curie helps answer your curiosity through end-to-end experimentation automation, ensuring that every step—from hypothesis formulation to result interpretation—is conducted with precision, reliability, and reproducibility.
- `https://github.com/Just-Curieous/Curie`

Large Language Models (LLM) Energy Leaderboard

Advisor: Prof. Mosharaf Chowdhury 2023 - 2024

- Developed an evaluation tool that quantifies the energy consumption of LLMs under different serving scenarios.
- 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 2021 - 2022

- 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++, Python, Rust, SQL, Java, Matlab, C, HTML