Ding (Eric) Ding

(971) 348-7909 · ericding@umich.edu · ericdinging.github.io/mywebsite/

EDUCATION

University of Michigan Ann Arbor, MI, United States
B.S.E., Computer Science, GPA: 3.95, Dual Degree Program Apr. 2024

Shanghai Jiao Tong University Shanghai, China
B.S.E., Electrical and Computer Engineering, GPA: 3.78, top 10% Aug. 2024

RESEARCH

Federated Learning Research Assistant *SymbioticLab, University of Michigan*
Advisor: Mosharaf Chowdhury May 2023 - Present

- Developed *Propius*, a Federated Learning (FL) resource management system, based on a microservice architecture using gRPC protocol and Redis database. Employed horizontal scaling and database sharding for large scale deployment.
- Built and deployed a distributed FL evaluation framework in GPU clusters, supporting multi-job parallel training.
- Implemented an advanced scheduler (*Venn*) in *Propius* that could improve the average job convergence speed by 88% compared to the state-of-the-art.

Embedded System Developer *The Fan Lab, University of Michigan*
Advisor: Xudong Fan May 2023 - Sep. 2023

- Developed *WASP*, a wireless wearable device, capable of monitoring sweat for early disease detection.
- Designed a reliable communication protocol that operates atop I2C and Bluetooth Low Energy protocols, ensuring high-fidelity data communication between two in-device microcontrollers and a terminal microcontroller.

AI Safety Researcher *Michigan AI Safety Initiative*
Advisor: Jakub Kraus Sep. 2022 - Dec. 2022

- Participated in a seminar series with a focus on the challenges of aligning advanced AI systems with human values.
- Built and trained a Reinforcement Learning model based on the Q-learning method to automate a virtual taxi.
- Analyzed cheating behaviors of RL taxi agents with defined objectives, and proposed a solution using Inverse Reinforcement Learning techniques.

Machine Learning Theory Research Assistant *John Hopcroft Center, Shanghai Jiao Tong University*
Advisor: Shuai Li Sep. 2021 - Mar. 2022

- Studied, implemented, and theoretically analyzed Non-Contrastive Self-Supervised Learning (SSL) algorithms.
- Conducted experiments, and compared the performances of Non-Contrastive SSL and traditional Supervised Learning, showing the robustness of SSL methods on imbalanced datasets with long-tail distribution.

PUBLICATIONS

- Jiachen Liu, Fan Lai, **Eric Ding**, Yiwen Zhang, and Mosharaf Chowdhury, "Venn: Resource Management Across Federated Learning Jobs" MLSys, 2024. (Under Review)
- Anjali Devi Sivakumar, Ruchi Sharma, Chandrakalavathi Thota, **Ding Ding**, and Xudong Fan, "WASP: Wearable Analytical Skin Probe" ACS Sensors, 2023.

VOLUNTEERING AND ACTIVITIES

Electrical Engineer *Shanghai Jiao Tong University Racing Team* Mar. 2021 - Aug. 2022

- Designed a carbon fiber dashboard using Catia, integrated ignition and fire extinguisher switches with the dashboard.
- Configured low-voltage electrical system wiring, and updated wire connectors for new electronic control units (ECU).
- Helped our team to win national second prize of 2021 Formula Student Combustion China.

Mathematical Contest in Modeling Project Team Leader *UM-SJTU Joint Institute* May 2022

- Led a team to evaluate an urban fire alarm system by building a machine learning and data analysis pipeline.
- Constructed a dataset from various alarm sensor logs. Achieved an 85.7% top-1 accuracy in predicting false alarms through deep neural network training on the dataset.
- Evaluated fire alarm subsystems across different city districts using a gray comprehensive evaluation model, and optimized the allocation of limited firefighting resources.
- Our project won the first prize in the 2022 China May Day Mathematical Contest in Modeling.

Student Instructor *UM-SJTU Joint Institute* Sep. 2020 - Aug. 2022

- Organized bi-weekly sessions with fellow students, providing guidance on academic development in STEM and emotional well-being. Promoted student engagement by hosting social events.
- Honored with the Shanghai Jiao Tong University Merit Student Award in recognition of outstanding student services.

GRANTS AND AWARDS

- University Honors, University of Michigan . . . . . Apr. 2023
- Dean's List, University of Michigan . . . . . Apr. 2023
- University Honors, University of Michigan . . . . . Dec. 2022
- Dean's List, University of Michigan . . . . . Dec. 2022
- Tang Junyuan JI Scholarship Nominee . . . . . Aug. 2022
- First Prize of 2022 China May Day Mathematical Contest in Modeling . . . . . May 2022
- Shanghai Jiao Tong University Pu Yuan Future Talent Program Scholarship . . . . . Jan. 2022
- Shanghai Jiao Tong University Undergraduate Excellence Scholarship . . . . . Dec. 2021
- Second Prize of Shanghai 2021 CUMCM Mathematical Contest in Modeling . . . . . Dec. 2021
- Shanghai Jiao Tong University Merit Student Award . . . . . Nov. 2021

Skills

Language: C++, Python, C, Matlab, Verilog, Javascript, Bash

Framework: PyTorch, CUDA, React

Tools: Docker, Git, LaTeX, VSCode, Arduino, STM32CubeIDE

Simulation and Modelling: Catia, Matlab, Mathematica, LabVIEW, Pspice, Proteus, Vivado