Ding (Eric) Ding

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EDUCATION

University of Michigan Ann Arbor, MI, United States
B.S., Computer Science, GPA. 3.95, Dean's List, Dual Degree Program Apr. 2024

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

Main Courses Taken

Applied Parallel Programming with GPUs, Computer Networks, Computer Organization, Data Structures and Algorithms, Electronic Circuits, Electromagnetics, Embedded System Design, Foundations of Computer Science, Introduction to Machine Learning, Logic Design, Operating Systems, Quantum Electromagnetics, Signals and Systems, Web Systems

Skills:

Programming: C++, Python, PyTorch, C, Bash, Matlab, Verilog, CUDA
Development Tools: Docker, Git, LaTeX, VSCode, Arduino, STM32CubeIDE
Simulation and Modelling: Catia, Matlab, Mathematica, LabVIEW, Pspice, Proteus, Vivado

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 a distributed FL evaluation peripheral framework, leveraging datacenter nodes for GPU-accelerated training
- Implemented an advanced scheduler (Venn) in Propius that could increase the average FL job convergence speed by 88%

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

- Developed a wearable closed-chamber hygrometer-based device, dubbed Wearable Analytical Skin Probe (WASP)
- Designed an efficient data channel that operates atop I2C and Bluetooth Low Energy (BLE) protocols, enabling low-latency communication between microcontrollers (MCU), and ensuring high-fidelity data collection
- Successfully deployed WASP in experimental setups for measuring insensible sweating (TEWL) and tracking skin dehydration-rehydration cycles

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 (RL) model using Q-learning method to automate a virtual taxi
- Analyzed cheating behaviors of RL agents, based on the simulated taxi environment

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

- 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