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

PROJECTS AND RESEARCH EXPERIENCE

Federated Learning Research Assistant May. 2023 - Present
Advised by Professor Mosharaf Chowdhury, SymbioticLab, University of Michigan Ann Arbor, Michigan, United States

- Developed a Federated Learning (FL) resource management system based on a microservice architecture using gRPC protocol and Redis databases. Employed horizontal scaling and database sharding for large scale deployment
- Implemented an advanced scheduler (Venn) that could increase the average FL job convergence speed by 88%
- Built a distributed FL evaluation system, leveraging datacenter nodes for GPU-accelerated training

Embedded System Developer May 2023 - Sep.2023
Advised by Professor Xudong Fan, The Fan Lab, University of Michigan Ann Arbor, Michigan, United States

- Developed a wearable closed-chamber hygrometer-based device, named Wearable Analytical Skin Probe (WASP)
- Designed a high-performance communication protocol that operates atop I2C and Bluetooth Low Energy protocols
- This protocol enables low-latency communication between microcontrollers, 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 Sep. 2022 - Dec. 2022
Michigan AI Safety Initiative, University of Michigan Ann Arbor, Michigan, United States

- Participated in a seminar series with a focus on the challenge of aligning advanced AI systems with human values
- Built and trained a Reinforcement Learning (RL) model based on Q-learning method to automate a virtual taxi
- Explored issues related to objective alignment in RL, utilizing the simulated taxi environment as a case study

Electrical Subteam Engineer Mar. 2021 - Aug. 2022
Shanghai Jiao Tong University Formula Student Racing Team Shanghai, China

- Designed a carbon fiber dashboard using Catia, and installed critical electronic parts such as ignition switches in formula student racing cars
- Optimized low-voltage electrical system wiring, and re-configured ECUs to meet new racing regulations
- Helped our team to win national second prize of 2021 Formula Student Combustion China

Leader of China May Day Mathematical Contest in Modeling Project Team May 2022
UM-SJTU Joint Institute, Shanghai Jiao Tong University Shanghai, China

- Led a team in the development of a Gray Comprehensive Evaluation model and a Neural Network model using Python and Matlab. Conducted a systematic analysis of a city's fire alarm systems
- Achieved an 85.7% top-1 accuracy in predicting false alarms by utilizing operational logs from various alarm sensors

- Evaluated fire alarm system status across different city districts, helping the allocation of limited firefighting resources
- Our project was awarded the first prize in the 2022 China May Day Mathematical Contest in Modeling

Research Assistant in "Combinatorial Optimization Problems in Machine Learning" Group Sep. 2021 - Mar. 2022
Advised by Professor Shuai Li, John Hopcroft Center, Shanghai Jiao Tong University Shanghai, China

- Studied, implemented, and theoretically analyzed supervised and self-supervised learning algorithms
- Conducted experiments, and compared two approaches' performances 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. [Under Review]

VOLUNTEERING

Student Instructor September 2020 - August 2022
UM-SJTU Joint Institute, Shanghai Jiao Tong University Shanghai, China

- Facilitated weekly meetings to support fellow students' transition to college life, providing guidance on academic resources and emotional well-begin, delivering STEM tutoring sessions to students in-need
- Promoted student engagement by organizing social events, such as museum visits and dinner outings

GRANTS AND AWARDS

- The Tang Junyuan 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 Excellent Scholarship . . . . . Dec. 2021
- Second Prize of Shanghai 2021 CUMCM Mathematical Contest in Modeling . . . . . Dec. 2021
- Shanghai Jiao Tong University Merit Student . . . . . Nov. 2021