Max Fu

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Education

University of California, Merced Merced, CA

Bachelor of Science in Computer Science and Engineering *Aug 2023 - May 2027*

Relevant Coursework: Data Structures, Algorithms, Advanced Programming, Linear Algebra, Discrete Math, Probability & Statistics, Computer Organization & Assembly

Work Experience

Undergraduate Teaching Assistant Aug 2024 – Dec 2024

***EE021** - Electrical Engineering with Python - (Prof. Ayush Pandey)* *Merced, CA*

- **Facilitate** lectures for **150 students** by demonstrating **Python** and **ARM Assembly** on open-**circuit programming**.
- **Lectured** for **65+ hours** over **15+ weeks** by addressing questions related to **circuit design** and **programming**.
- **Enhanced** student engagement by creating an **interactive coding exercises**, increasing lab participation by **20%**.

Undergraduate Research Assistant Oct 2023 – Oct 2024

LLM-based Autograder - (Prof. Ayush Pandey) *Merced, CA*

- **Autograder** improved **150 students'** grades by **15%** for **EE021** course by providing detailed grading and feedback.
- **15% less compute** within the each epoch when **fine-tuning** by implementing **LoRA** on LLM-based Autograder.
- **Increasing** the efficiency by **50%** when **fine-tuning** the **Autograder** through creating a **CSV & JSON** data pipeline.

ACM SIG-AI LEAD Dec 2023 – May 2024

Association of Computing Machinery *Merced, CA*

- **Taught** over **50+** students out of **200** active members by organizing bi-weekly workshops on Deep Learning.
- **Machine Learning** workshops including creating **Multivariate Linear** for **Regression**, and **SVM** for **Classification**.
- **Deep Learning workshops** on creating **Multi-Layer Perceptions**, **Transformers**, and **LLM** from scratch.

Projects

OpenCourse - Student Resource Exchange Platform | *React, Node.js/Express, PostgreSQL, AWS S3*

- **Implemented** .edu email verification for user authentication, reducing spam registrations by **75%**.
- **Enabled 500+** college students to share academic materials, resulting in a **40**% boost in resource accessibility.
- **Integrated** AWS S3 for PDF file management and developed advanced search and filtering by course, semester, and material type, cutting resource retrieval times by 30%.

MCC - (JIT Compiler in C) | *C*

- **Developed** a simple **JIT Compiler** that **compiles C code** and emits **ARM Assembly** in a **1000** line codebase.
- **Implemented** parsing, lexical analysis, code emission, and **ARM64** specific **optimizations** enhancing performance.
- **Achieving** a **15% reduction** in execution time for compiled programs by optimizing register allocation and instruction scheduling.

Bcon - (Byte Conversion CLI Tool) | *C*

- **Decrease** in processing time by **50%** compared to manual methods when handling large numerical conversions.
- **Reduced** manual calculation errors by **90%**, implementing flag-based commands, facilitating efficient conversions.
- **Enhancing** data interpretation efficiency by developing a **CLI tool**, enabling developers to convert data between binary, hexadecimal, and decimal formats.

Technical Skills

Programming Languages: MIPS Assembly, C, C++, Go, Python, Java, PostgreSQL, HTML, JavaScript, CSS
Frameworks/Libraries: React, Node.js PyTorch, TensorFlow, Pandas, NumPy, Matplotlib, Seaborn, scikit-learn
Developer Tools: Git, GitHub, Node.js, Express, Redis, TMUX, NGINX, HuggingFace
Cloud & DevOps: AWS (S3, EC2, Lambda), Docker
Concepts: Software Engineering, Object-Oriented Design, Data Structure and Algorithms, Unit Testing, Version Control, Frontend, Backend, Reverse Proxy, restAPI, Natural Language Processing, Deep Learning, Linux, UNIX, Linux Kernel, Operating System, Compiler Design.
Languages: English (Native), Mandarin (Native), Cantonese (Proficient)