Mai Xu

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Education

University of Michigan **Aug. 2022 – May 2024**
Bachelor of Science in Computer Science *Ann Arbor, MI*

Shanghai Jiao Tong University **Sep. 2020 – Aug. 2024**
Bachelor of Science in Electrical and Computer Engineering *Shanghai, China*

Experience

Software Engineering Intern **Jan. 2023 – Now**
Laboratory of Mind, Machine, and Mathematics, University of Michigan *Ann Arbor, MI*

- Designed an intuitive and visually appealing online morality game interface aiming at study human cooperation using **React, Typescript, and Material UI** and increase 30% in user engagement.
- Enabled real-time cooperation among up to 50 players simultaneously by developing a **Flask** backend with **socket programming**, resulting in the collection of over 10,000 data points for studying cooperation under different scenarios.

Software Engineering Intern **May 2022 – Sep. 2022**
Laboratory of Information System Technology, Shanghai Jiao Tong University *Shanghai, China*

- Utilized **Spring Framework** and **Maven** to develop multiple service components for team users to automate workflow and self-define web pages for their projects, boosting productivity by 20% while enhancing customization.
- Created an interactive tree graph with **React, Javascript and Antd** that visualized all team members and their positions in team and supported real-time editing, increasing team member capacity by 50%.
- Resolved privacy issue in account database modal by reconstructing modals concerning user and team department.
- Deployed platform securely and efficiently with **Docker** on **Kubernotes** and is eventually used by the School of Software Engineering teaching staff (group of around 40).

Data Analyst Intern **Jul. 2021 – Jan. 2022**
John Wiley & Sons China, Ltd. *Shanghai, China*

- Developed **Python scripts** to analyze vast usage and citation data, generate diagrams and reports, and provide actionable insights that informed strategic decision-making at John Wiley & Sons.
- Updated the journal homepage weekly and modified the user interface using **HTML, Javascript and SCSS**, resulting in an enhanced user experience and increased user engagement on the Wiley Online Library platform.

Projects

Insta485 | *React, JavaScript, Flask, SQL, REST API, AWS* **Jan. 2023 – Feb. 2023**

- Developed Insta485, a client-side web app that uses **Flask** as server to interface with a **SQLite3** database. Implemented **React** components with state management for improved UI/UX.
- Implemented **RESTful** communication between the client-side and server-side, enabling features like user authentication, photo upload/viewing, post creation/management, and user follow/unfollow functionality.
- Utilized **Amazon Web Services (AWS)** services such as S3 and EC2 to deploy and host the web application, resulting in a functional and user-friendly social media platform with the potential to have a broad impact in the online community.

Thread Pool | *Modern C++, Multi-thread Programming* **Jan. 2023– Feb. 2023**

- Developed a thread library in C++ using **modern c++** techniques such as **RAII** design patterns and **smart pointers** to ensure safe and efficient management of system resources.
- Created a test suite utilizing **multi-thread programming** to ensure thread safety, performance, and cover various scenarios including thread creation, synchronization, and error handling.

Ride-hailing Traffic Congestion Analysis | *Pandas, Numpy, Tensorflow, Matplotlib* **Jul. 2021 – Jan. 2022**

- Participated in a school-industry research program with DiDi Global Inc. to provide insights on real-time road congestion to improve transportation infrastructure and decrease traffic congestion, ultimately impacting DiDi policy-making.
- Performed data preprocessing and feature extraction using **Pandas** and **Numpy** scripts, and used **Python** to manipulate and extract insights from large-scale data sets.
- Developed a **Convolutional Neural Network** model using **Tensorflow** to predict levels of road congestion, achieving a prediction accuracy of 90%. Visualized the relevant results using **Matplotlib** and **Seaborn**, providing an intuitive understanding of the traffic situation to policy-makers.

Technical Skills

Languages: C/C++, Python, Javascript, Typescript, Java, HTML, CSS/SCSS, Bash, SQL, Matlab
Technologies/Frameworks: React, Material UI, Antd, Flask, Django, Springboot, numpy, pandas, TensorFlow, Hexo
DevOps: Git, LaTeX, Docker, Shell, Linux, Vim