Matt Xu

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EDUCATION

UNIVERSITY OF MINNESOTA - TWIN CITIES **2023 - 2024**

Major in Computer Science - Bachelor of Science (3.7 Technical GPA)

UNIVERSITY OF MARYLAND - COLLEGE PARK **2024 - 2027**

Pathway Major in Computer Science - Bachelor of Science (3.7 Technical GPA)

RELEVANT COURSEWORK TAKEN

Machine Architecture, Data Structure and Algorithms, Linear Algebra, Discrete Mathematics

EXTRACURRICULARS/CLUBS

Project Member of UMN AI Club; Treasurer of UMN Brazilian Jiujitsu Club; Social Coding (Software Development Club); Fullstack Software Engineer for UMD App Dev Club; Software Developer for UMD AI/ML; & Competitor for UMD Brazilian Jiujitsu Club

PROFESSIONAL EXPERIENCE

Children's National Hospital **Sept 2024 - May 2025**

Contract Fullstack Software Engineer

- Engineered fullstack mobile application built to monitor patients and issue real-time alerts with a microcontroller that tracks CO_2 levels
- Developed interactive interface with **Flutter** visualizing real time values from an Arduino Uno device utilizing **Django** and **Python**
- Constructed patient creation portal to establish many-to-many relationships with **Next.js**, **Typescript**, **Express.js**, and **PostgreSQL**
- Boosted medical device range by **10x** and reduced vulnerabilities by engineering a secure WiFi/BLE Raspberry Pi device as a hub
- Coordinated with corporate representatives and engineers weekly to coordinate tasks, features, & deadlines using Agile methodology

University of Maryland (Human-Computer Interaction) **Sept 2024 - May 2025**

Research Assistant (Qualitative Analysis and ML Systems)

- Developed data analysis tools and systems to optimize qualitative analysis, reducing data operations and manual processing by **40%**
- Contributed to **PRAXA**, a structured standard language framework that identifies fundamental components of what-if analysis
- Conducted literature reviews and qualitative analysis of 35+ papers from top HCI conferences to surface design patterns and gaps
- Assisted in preparing research for submission to top-tier conferences for improving analytical workflows and interpretability in HCI

University of Minnesota (Human-Computer Interaction) **Dec 2023 - Aug 2024**

Research Assistant (Data Visualization and Neural Networks)

- Designed, trained, and deployed graph neural network models inside a serverless full-stack web app showcased at top-tier HCI workshops
- Spearheaded collaborative software development initiatives, leveraging CI/CD, code reviews, and Git branch workflows totaling **400 hrs**
- Developed interactive data visualizations using Javascript libraries to generate model insights with intuitive visuals for non-experts
- Facilitated live collaborative debugging sessions with other student researchers, slashing software implementation errors by **70%**

PROJECTS

GitGraph | *Bitcamp Hackathon Project* **April 2025**

- Engineered an interactive mobile app for GitHub repositories to visualize branches, commits, and files as a connected graph network
- Enhanced codebase inspection by making commits, branches, and files interactable, redirecting to their respective links for quick access
- Developed using **React Native**, **Expo**, and **D3.js** to parse GitHub API data and render a interactive force-directed graph network

GNN101 | *IEEE VIS 2024 Workshop Project* **Jan 2024 - Aug 2024**

- Collaborated with institutional team to deliver IEEE VIS 2024 workshop on human-centered visualization, led by Prof. Qianwen Wang
- Implemented a minimalist, interactive serverless **Next.js** and **D3.js** web application to visualize graph neural network models and build hover and click interactions to inspect node embeddings and attention weights between individual nodes, edges, and layer properties
- Deployed the tool in graduate-level lectures at Stanford and Harvard, engaging 100+ students per session while surveying for UX feedback

SpeechHacks | *ACM MicroHack Hackathon Project* **March 2024**

- Developed full-stack mobile app using **React Native**, **Expo**, **TypeScript**, **Tailwind CSS**, and a integrated **Django** REST API
- Designed architecture for users to submit or create in-app recordings of conversations with backend that transcribes speech in real time and offers AI-powered grammar feedback, with WebSocket streams for live audio to analyze user interactions with simulated conversations
- Secured **2nd place** among 20 teams in MicroHack hosted by the Association for Computing Machinery at the University of Minnesota

plant.io | *Social Coding Embedded Project* **Jan 2024 - June 2024**

- Engineered full-stack IoT web application with **React.js** & **TypeScript** for a responsive interactive dashboard for ESP32-based embedded systems and **SQLite** database to monitor and collect real-time light and moisture sensor data from greenhouse environments
- Developed and integrated backend with RESTful API and MQTT protocol with **Node.js, Express**, **C**, **Mosquitto**, and **FreeRTOS**

Goba | *Mobile Development Initiative* **Aug 2023 - Dec 2023**

- Implemented full-stack mobile project using **React Native**, **TypeScript**, and **Expo** with a **PostgreSQL** backend, featuring geolocation
- Leverages community crowdsourcing to rank local vendors, allowing users to upload photos and rate drinks on criteria utilizing moderation

Convolutional Neural Network | *AI Club Project* **Aug 2023 - Dec 2023**

- Achieved 92% classification accuracy on image datasets by designing and training convolutional neural networks in **Python** and **NumPy**
- Implemented from scratch vectorized NumPy kernels for convolution, max-pooling, ReLU, gradient descent, and backpropagation

ADDITIONAL INFORMATION

Languages: *Python, Java, Javascript, HTML, CSS, C, C++, Typescript, Dart, Go*

Libraries, Tools, & Frameworks: *Pandas, NumPy, React, Node JS, Express, Tailwind, Next, Expo, Django, Flask, Flutter, PostgreSQL, SQLite, MySQL, MongoDB, Docker, Agile*