Marco Wang

Software Engineer · Computer Science and Physics · Northwestern University

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Education

Northwestern University *Evanston, IL*

M.S. in Computer Science, B.A. in Physics [M.S. GPA: 3.95/4.00] *Expected Jun. 2024*

- **Relevant Coursework:** Generative ML, NLP, Operating Systems, CUDA Programming, Stochastic Methods, Computational Physics

Work Experience

rabbit *Los Angeles, CA*

Software Engineer *Feb. 2024 - Present*

The Boring Company *Las Vegas, NV*

Software Engineer Intern *Jun. 2023 - Aug. 2023*

- Led the development of a simulator for the Vegas Tunnel Loop to validate software systems and architectural designs, built using Go and C#
- Centralized maintenance for the vehicle fleet by building a issue tracker using ReactJS/PostgresSQL, saving 30+ man-hours monthly.
- Built a physics engine and an automated testing pipeline for simulating vehicles and passengers, matching historical data with ≥ 90% accuracy.
- Decreased simulator runtimes by 80% by implementing a cache-based path-fining algorithm and optimizing a backend graph search algorithm.
- Boosted regulatory tests completion by 15% over 2 months by building data visualization UIs and automating alerts using React and NodeJS.

Workiva *Chicago, IL*

Software Engineer Intern *Jun. 2022 - Aug. 2022*

- Contributed to backend services for font management and file I/O in an online document editor using Java and Go.
- Automated a weekly font upload task by building a browser-based client using PHP and Bash, reducing time spent by 90%.
- Improved color accuracy by 40% on PDF export for charts, fonts and images by integrating API endpoints with open-source software.
- Designed and built a smoke testing suite using Puppeteer, improving code coverage and efficiency of detecting breaking changes.
- Developed a custom Java package for dynamic test data generation, removing dependency on legacy data and boosting code reliability.

Northwestern Tiilt Lab *Evanston, IL*

Research Intern *Sep. 2021 - May. 2022*

- Collaborated on building an audio processing server to provide real-time learning analytics for a data-capture device.
- Engineered a real-time speaker diarization service using PyTorch, boosting speaker diarization accuracy by 25%.
- Implemented a multi-threaded audio buffer, enhancing diarization runtime performance by 50%.
- Reverse-engineered legacy code to integrate advanced speech recognition models, elevating speaker tagging and recognition accuracy by 50%.

Technical Projects

Personal Projects *Evanston, IL*

Self-Directed *Jan. 2022 - Present*

- **AI Notes:** Coded an web app to generate notes and study guides from lectures using LLMs and vector databases to optimize student workflows.
- **Tomo:** Built an LLM-based toy, enhancing children's learning through story-driven dialogues, using async audio interfacing in Python.
- **Platz UI:** Developed a designer-centric UI component library in NextJS, streamlining the design-to-implementation process.
- **Conway:** Engineered a C++/CUDA implementation of Conway's Game of Life, achieving a 1000x speedup over the CPU-implementation.

Igloo Chat App *Evanston, IL*

Full Stack Developer *Feb. 2021 - Sep. 2021*

- Handled full-stack tasks for the development of a social media chat app using the Laravel, Firebase and React Native stack.
- Implemented REST APIs and database schemas for user messaging and analytics using the model-view-controller design pattern in Laravel.
- Designed and built responsive cross-platform UI components for displaying media and user messaging.
- Deployed and tested an MVP, validating design choices through active feedback from a 30-student pool.

Skills

Programming Python · Go · Typescript · Java · C/C++ · SQL · C# · CUDA · Jupyter · PHP · Bash

Technologies Git · NextJS · Node.js · Firebase · postgresSQL · sqlite · Laravel · PyTorch · Bazel · Docker + K8s · Unity · Godot