Michael Peng

Master Copy

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Enthusiastic software engineering generalist, reflective instructional aide, and conscientious servant leader.

Education

University of Michigan, College of Engineering — Graduating April 2024 or 2025
B.S.E. in Computer Science

GPA 4.00/4.00
Awards Branstrom Freshman Prize, University Honors, Engineering Honors, Dean's List, Angell Scholar

Work Experience

Computer Science Instructional Aide — 2022 – Present
Computer Science and Engineering, University of Michigan — Course website

- Hosting a Lab class and Office Hours for EECS 280 (Programming and Intro Data Structures)
- Answering questions on the class forum to support student success
- Led Lab to achieve the highest median midterm grade out of all 44 Lab classes in Winter 2023

Residential Community Peer Mentor — 2022 – 2023
Living ArtsEngine, University of Michigan — Program website

- Hosted gatherings, planned events, and ran a technical workshop for 87 first-year students who lived together
- Led a collaborative chat bot project ("LAE OpenBot") for the community's Discord server
- Supported interdisciplinary students in creative team projects with group dynamics, leadership, organization, communication, and the creative process
- Advised and empowered first-year students in academics and college life

Software Development Intern — Summer 2022
State Street

- Migrated 3 legacy desktop critical tools for securities trading & post-trade reporting from SQL Server to Oracle Database
- Inspected SQL Server database for migration and advised database administrators on schema changes

COVID-19 Research Intern — 2020 – 2021
Brandeis University — Publication

- Prepared datasets for a team that predicted COVID-19 case trends for each state in the United States
- Implemented algorithm to estimate mobility between U.S. states using Geopandas and Python
- Crafted the team's website to visualize predictions stored in Airtable

Product Development Intern — Summer 2019
Codio, Inc. — Examples

- Collaborated with a 5-person team using Scrum to author programming assessments for the initial release of Codio's Global Assessments Library
- Invented automated tool to fix assessments for compliance with conventions, boosting product quality

Projects

Dog Breed Classification Machine Learning Model — 2023

- Constructed, evaluated, and refined a Convolutional Neural Network for dog breed classification using NumPy and PyTorch in Python
- Incorporated transfer learning, data augmentation, residual connections, batch normalization, and weight decay to tweak model for optimal validation performance

Class Discovery and Enrollment Toolkit ("CourseKit") — Link — 2021 – Present

- Constructed 3 iterations of a backtracking algorithm in F# and C++ that finds all feasible schedules given courses to take at the University of Michigan and ranks them according to each user's preferences
- Wrote and collaboratively launched a schedule optimizer platform using React (Remix), TypeScript, and AWS, delivering optimal schedules to >300 Michigan students in Winter 2023
- Built the backend of the enrollment trend predictor using Python and MySQL on AWS, with >300 users in Fall 2022

Professional Relations Management Browser Extension ("Plinq") — 2022

- Collaborated with a 5-person team from V1 Product Studio to design, build, and market a web browser extension in React (Next.js) that helps people chronicle and maintain their professional relationships
- Reverse-engineered internal LinkedIn APIs and developed an embedded user interface to help users import connections from LinkedIn

Relational Database Manager ("SillyQL") 2022

- Planned and developed a relational database manager with syntax resembling SQL using modern C++ and Test-Driven Development
- Profiled, analyzed, and tuned program for optimal performance

COVID-19 Machine Learning Model Website 2020 – 2021

- Independently created and tuned a Recurrent Neural Network for COVID-19 transmission prediction in R, combining state-of-the-art mechanistic and statistical techniques from academia
- Developed a web-based visualization of COVID-19 transmission per variant in the United States
- Drafted a 29-page research article describing the model

PreMatch.org Link 2018 – 2021

- Founded and co-developed a website, Discord chat-bot, and iOS app to help Andover High School students understand and apply their complex schedules on a daily basis
- Website (backend in Python) showed >1,100 students their classmates before each school year started
- iOS app in Swift showed >500 students their classes on any given day, facilitating academic planning

Microprocessor Emulator ("csim6502") GitHub 2018 – 2018

- Designed and implemented a complete emulator of the MOS 6502 microprocessor in maintainable, expressive C++ using strict Test-Driven Development within 2 weeks

Activities

Student Organization Webmaster 2022 – Present
FIRST Alumni and Mentors Network at Michigan Website

- Leading website committee to manage famnm.club for students, robotics teams, and corporate sponsors
- Emphasizing formal UX (user experience) research, inclusive design thinking, and performance optimization
- Leading systematic transition from Jekyll (Ruby) to Astro (TypeScript) for features that improve website performance and codebase maintainability

Project Leader, Education Committee Member, Project Committee Member 2022 – Present
Michigan Data Science Team Project Report

- Refined introductory Python, Pandas, and Matplotlib tutorials and checkpoints for new members
- Planned advanced tutorials and talks to educate members on data science
- Led a project that used BigQuery to investigate the reliability of Blue Buses at the University of Michigan
- Contributed to projects on COVID-19 trends, Reddit r/place activity, and Euchre reinforcement learning

Chief Software Officer & Team Leader 2019 – 2021
Andover Robotics Club GitHub

- Oversaw software engineering in Java & Kotlin for three *FIRST* Tech Challenge (FTC) robotics teams
- Built common codebase and documentation site to help club posterity with programming
- Developed clubwide, web-based Attendance Management System (AMS) using Svelte and Firebase to facilitate attendance planning and contact tracing in response to COVID-19
- Created and marketed web browser extension that helped top FTC teams in Massachusetts record, share, and analyze other teams' performance for alliance selection during competitions in 2020

Technologies

Languages	Python, C++, HTML/CSS, Rust, Java, JavaScript, TypeScript, Swift, R, Kotlin, LaTeX
Libraries	React (Next.js, Remix), Svelte, Flask, Tailwind, Pandas, Doctest, Google Test, Tidyverse
Platforms	Windows, macOS, Linux, iOS, Google Cloud, Firebase, GitHub, GitLab

Languages

Chinese Mandarin (native), English (fluent), Spanish (conversational)