

Michael Peng

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EDUCATION

University of California, San Diego <i>M.S. in Computer Science</i>	2024 – December 2025 (expected) GPA: 4.00/4.00
University of Michigan, Ann Arbor <i>B.S.E. in Computer Science, Minor in Entrepreneurship</i>	2021 – 2024 GPA: 4.00/4.00

TECHNOLOGIES

Languages	Python, C, C++, Julia, Go, HTML/CSS, Rust, Java, JavaScript, TypeScript, Swift, Kotlin, SQL, LaTeX
Libraries	React (Next.js, Remix, Vite), Svelte, Flask, FastAPI, Tailwind, Pandas, PyTorch
Platforms	macOS, Linux, iOS, Google Cloud, AWS, Oracle Cloud, Firebase, GitHub, GitLab, Bitbucket

WORK EXPERIENCE

QA Automation Software Engineering Intern June 2025 – September 2025
Apple Sunnyvale, CA

- Enabled visual detection of AIV (Apple Immersive Video) playback controls in automated tests. Collected >2,000 screenshots, trained ML models, developed CI pipelines for evaluation, and integrated models into test automation library in Swift
- Researched, integrated and tested 6 stereoscopic depth estimation models to verify depth rendering in AIV
- Developed custom CV pipeline in Python and Swift to detect frame progression, view mode and immersion level from screenshots

Computer Science Teaching Assistant January 2025 – June 2025
University of California, San Diego [Course website](#)

- Led two teams of Tutors to prepare lab classes and programming assignments for CSE 29 (Systems Programming and Software Tools), which teaches Linux tools, C programming, operating systems concepts, pair programming, Git, and memory management
- Hosted Lab classes and office hours to support a course of over 300 students
- Advised TA team on course conventions and coordination as Head TA in Spring 2025

Software Engineering Intern May 2024 – Dec 2024
Mosaic ATM [FLOE White paper](#)

- Led full-stack design and development of Fleet Logistics Optimization Engine (FLOE), a novel platform for optimizing, simulating, and executing multi-UAV imaging missions using SQLite, Python, REST, React, and TypeScript
- Wrote >200 unit, integration, and end-to-end tests using vitest, Playwright, and pytest
- Pioneered test automation and resolved >10 QA Jira tickets for [COMETTS](#), a Traffic Flow Management training system deployed at the FAA

Drone Routing Research Intern 2023 – 2024
Aerial Vantage [Publication](#)

- Designed and applied algorithms in Python to build automated AI/ML pipeline for optimizing UAV agricultural imaging operations in collaboration with specialists from Aerial Vantage
- Built novel binary time-series prediction algorithm for crop distribution maps that achieved 75% accuracy on Michigan counties, exceeding conventional model performance (SVM, Decision Trees)
- Presented research findings at NASA Ames Research Center and AIAA AVIATION 2024

Computer Science Teaching Assistant 2022 – 2024
University of Michigan [Course website](#)

- Hosted a Lab class and Office Hours for EECS 280 (Programming and Intro Data Structures), which teaches unit testing, memory management, object-oriented design, linked lists, binary search trees, debugging, and exceptions in C++
- Customized lecture content beyond faculty expectations with Kahoots and review of autograded work
- Started team effort to add Generative AI feedback to lab worksheets; built prototype using Python, Streamlit, and LangChain

Residential Community Peer Mentor 2022 – 2023
Living ArtsEngine, University of Michigan [Program website](#)

- Hosted gatherings, planned formal events, and ran a technical workshop for 87 first-year students who lived together
- Started collaborative chat bot (“[LAE OpenBot](#)”) for the community’s Discord server, written in TypeScript using Discord.js
- 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 June 2022 – August 2022
State Street Boston, MA

- Migrated 3 critical tools for securities trading & post-trade reporting written in C# from SQL Server to Oracle Database
- Delivered thorough test suite for new database layer without being asked to do so
- 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 and Jira to write 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

Authorship Attribution and Imitation

2024

- Gathered a dataset of 14,314 Discord messages from 10 consenting users across 38 channels
- Fine-tuned DistilGPT2, Llama3.2-3B, and gemma-7b using HuggingFace and Unsloth.ai (Python) for authorship imitation
- Reached authorship attribution accuracy of 62.1% by fine-tuning DistilBERT, DeBERTa-v3, and XLM-RoBERTa Large using HuggingFace (Python) on message-author pairs

Wikipedia Search Engine ("ask485")

2023

- Collaborated with a team of 3 developers to build a search engine for Wikipedia pages utilizing tf-idf and PageRank
- Designed and wrote key components of a MapReduce pipeline for tf-idf scores and the search engine's web frontend in Flask

Cooperative House Work Schedule Optimizer ("Shifter")

[Documentation](#)

2023 – Present

- Consulted Work Managers to design Google Apps Script (TypeScript) solution that uses linear programming to generate work schedules for [Escher Cooperative House](#), optimizing for preferences
- Wrote script that built the initial housewide work schedule for 166 house members in Fall 2023 and Winter 2024

Airline Disruption Recovery Research

Advisor: [Max Z. Li](#)

2023 – 2024

- Launched investigation into Southwest Airlines' scheduling crisis in December 2022 with collaborators from Michigan, MIT, and Harvard to dissect flight records and model network disruption
- Integrated flight records from FAA SWIM, NASA Sherlock, and DOT BTS using DuckDB SQL and Pandas in Python to study initial disruption propagation
- Built [agent-based model](#) in Rust to simulate disruption propagation through airline networks and evaluate recovery strategies
- First author of papers presented at [ICAS 2024](#), nominated for Best Student Paper Award at [IWAC 2024](#), and published in [Frontiers in Built Environment](#)

Dog Breed Classification Machine Learning Model

2023

- Constructed, evaluated, and refined a Convolutional Neural Network for dog breed classification using 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 thoroughly tested 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
- Built and collaboratively launched a [schedule optimizer platform](#) that delivered optimal schedules to >500 students using React (Remix), TypeScript, and AWS DynamoDB
- Built the backend of an [enrollment trend predictor](#) that served >300 students using Python and MySQL on AWS

Organization Lineage Tracker ("HysTree")

[Presentation](#)

2022

- Collaborated with 3-person team via [Michigan Open UX \(MOUX\)](#) to research user needs and develop full prototype of organizational lineage tracking platform in Figma
- Led organizational outreach to Living ArtsEngine for user research, enabling team to identify customer pain points
- Designed intuitive UI for tree editing and spreadsheet importing processes in Figma

Professional Relations Management Browser Extension ("Plinq")

2022

- Collaborated with an interdisciplinary team of 4 members 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 C++14 and Test-Driven Development
- Profiled, analyzed, and tuned program for optimal performance

COVID-19 Prediction 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

Andover Robotics Club Attendance Management System

[Link](#)

2021

- Designed and built web app for tracking attendance and assigning socially-distanced seats at 58 meetings at Andover High School's robotics club from 2020 to 2021 using Svelte and Firebase within 24 hours

High School Schedule Platform ("PreMatch")

[Link](#)

2018 – 2021

- Founded and co-developed a website (Python/Flask, HTML/CSS/JS), Discord chat-bot (Ruby), and iOS app (Swift) to help Andover High School students share and navigate their complex schedules on a daily basis
- Website hosted on Google App Engine 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

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

ACTIVITIES

Workshop Mentor (“Hack Squad”)

2024

Association for Computing Machinery at UC San Diego

[Curriculum](#)

- Guided >80 UC San Diego students through a 6-week course on full-stack web development, covering HTML, CSS, JavaScript, React, Express.js, MongoDB, and Vercel

Student Organization Webmaster

2022 – 2024

FIRST Alumni and Mentors Network at Michigan

[Website](#)

- Led website committee to maintain and improve [famnm.club](#) (HTML, Bootstrap, SCSS) for volunteers, robotics teams, and corporate sponsors
- Led committee to bring Lighthouse performance and accessibility scores from ≈ 84 to ≈ 97
- Reduced average page payload size by over 70% and improved codebase maintainability by transitioning build system from Jekyll (Ruby) to Astro (TypeScript)

Project Leader, Education Committee Member, Project Committee Member

2022 – 2024

Michigan Data Science Team

[Bus Project Report](#)

- Refined introductory Python, Pandas, and Matplotlib tutorials and checkpoints for new members
- Led a team to investigate bus service quality at the University of Michigan using 1.97 GB of tracking records on Google Cloud BigQuery
- Contributed to projects on COVID-19 trends, Reddit [r/place](#) activity, and reinforcement learning

Chief Software Officer & Team Leader

2019 – 2021

Andover Robotics Club

[GitHub](#)

- Oversaw software engineering in Java & Kotlin using Android Studio for three *FIRST* Tech Challenge (FTC) robotics teams
- Built common codebase and [documentation site](#) to help club posterity with programming
- Created and marketed [web browser extension](#) (HTML, TypeScript) that helped top FTC teams in Massachusetts record, share, and analyze other teams’ performance for alliance selection during competitions in 2020