JONATHAN MA

(510) 364-9318 ● jonathanjma03@gmail.com ● jonathanjma.com ● linkedin.com/in/jonathan-ma3 ● github.com/jonathanjma

Education

Cornell University, College of Engineering (Ithaca, NY) *Anticipated Graduation December 2025*

- Computer Science (BS), GPA: 4.0, Dean's List (x4)
- Selected Coursework: Java & Data Structures, Analysis of Algorithms, Computer Vision, Machine Learning, Computer Organization, Multivariable Calculus, Linear Algebra, Intro to Robotics (Fall 2024)

Technical Skills

- Languages: Java and Python (Proficient), C/C++, JavaScript, TypeScript, HTML/CSS, OCaml, Arduino, SQL
- Frameworks/Tools: Flask, React, Angular, Firebase, Flutter, OpenCV, JavaFX, Git, Docker, Linux, Postgres

Experience

Cornell Space Systems Design Studio: Alpha CubeSat Flight Software Co-Lead *Oct 2022 - Present*

- Using C++/Arduino to build embedded flight software for CubeSat and light sail payload in Low Earth Orbit
- Developing code for memory constrained systems to interface with GPS, IMU, and telemetry. Conducting extensive hardware-in-the-loop integration tests (*2023-24*)
- Built & deployed full-stack ground station with intuitive React/Bootstrap control UI, Elasticsearch/Kibana dashboards for mission critical telemetry data, and Nginx reverse proxy (*2022-23*)
- Converted backend from Clojure to Python Flask to improve maintainability, achieving 40% code reduction

Cornell College of Computing and Information Science: Teaching Assistant *August 2023 - Present*

- OCaml Functional Prog, Computer Organization (300+ students), final project manager for 4 student groups

RTX Collins Aerospace: Systems Engineering Intern (SEPP) *June - August 2024*

- Evaluated feasibility of heterogeneous Information Centric Routing over IP using Named Data Networking
- Collaborated with group of highly-selective interns to conduct research studies w/ Raspberry Pis utilizing Ansible & Wireshark. Extended 50K line open-source C++ codebase to support network persistency
- Presented & demoed final work to 500+ audience of interns, managers, and executives

Johns Hopkins University Applied Physics Lab: Ground Software Engineering Intern *May - Aug 2023*

- Led team of interns through design/creation of Angular and Java EE based web app for parsing spacecraft command and telemetry packets for NASA's IMAP and Dragonfly missions, used by 50+ employees
- Applied Agile methodologies and solicited feedback from project leads throughout project duration
- Utilized Playwright to automate system tests + improve reliability for dept. wide app used by 400+ employees

CognoTrain, Inc: Software Engineering Intern *June - Aug 2022*

- Pioneered patent pending cognitive training app to improve memory of Alzheimer's patients in startup setting
- Utilized Flutter to build a personalized + accessible app, APIs to securely integrate backend user data and login

First Tech Challenge Robotics Team #7303: Robot Automation Lead *Aug 2019 - June 2022*

- Won Maryland Tech Invite out of top 32 teams globally, Control Award for most innovative control/automation
- Collaborated with team to implement OpenCV object detection, odometry localization, FSMs, & PIDF control
- Developed multi-stage automation and CV algos to autonomously collect + shoot rings from anywhere on field
- Created JavaFX simulator for path planning and replaying robot actions for testing without robot hardware

Programming Projects

- Happiness App, Social journaling app where users can track + gain insights about their mood and connect with friends. Created RESTful API w/ Flask, SQLAlchemy, and Postgres and UI w/ React and Tailwind, 100+ users
  - Implemented end-to-end encryption, token-based authentication, comprehensive test suite + docs
- Rubik's Cube Solving Robot, Arduino powered robot optimized to solve a Rubik's Cube in 3-4 seconds
- Infinite Campus Grades++ (JS, HTML), Chrome extension to revamp high school grades UI (4K users)
- Breadboard Simulator (Python), 2020 Silicon Valley Hackathon: Best Beginner Hack (out of 60 projects)