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 (4 semesters)
- Selected Coursework: Java & Data Structures, Computer Vision, Machine Learning, Systems Programming, Analysis of Algorithms, Multivariable Calculus, Linear Algebra, Intro to Robotics (Fall 2024)

Technical Skills

- Languages (Proficient): Python, Java, C/C++, JavaScript, TypeScript, HTML/CSS, OCaml, PostgreSQL
- Frameworks: Flask, React, Arduino, ROS, OpenCV, NumPy, Pandas, JavaFX, Flutter, Angular, Firebase
- Tools: Git, Jupyter, Docker, Linux, Bash, PlatformIO, Ansible, Elasticsearch, Kibana, Jira

Experience

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

- Promoted to co-lead (2024) for exemplary performance and taking initiative to learn, leading 5 person team
- Using C++ to build embedded flight software for CubeSat and light sail payload in Low Earth Orbit
- Developing code for memory constrained embedded systems to interface GPS, IMU, and telemetry
- Conducting extensive hardware-in-the-loop integration tests to ensure mission readiness for April 2025 launch
- Built & deployed full-stack ground station with intuitive React/Bootstrap control UI, Elasticsearch/Kibana dashboards for mission critical telemetry data, and Nginx reverse proxy
- 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*

- Impacted 600+ students in OCaml Programming & Computer Systems classes, served as final project manager

RTX Collins Aerospace: Systems Engineering Intern (SEPP) *Summer 2024*

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

Johns Hopkins University Applied Physics Lab: Ground Software Engineering Intern *Summer 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 *Summer 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 for users to track their mood and connect with friends. Created Flask, SQLAlchemy & Postgres backend REST API, React & Tailwind frontend UI (100+ users)
    - Implemented end-to-end encryption, token-based auth, Redis job queue, 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)