JONATHAN MA

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

Passionate CS student with 5+ years of experience in software development, robotics, and embedded systems on an active space mission. Proven leader and fast learner who thrives in dynamic, interdisciplinary environments.

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, Intro to Robotics & Robot Reinforcement Learning (Fall 2024)
- TA for Computer Organization and Systems (C, Assembly) and Functional Programming (OCaml) classes

Technical Skills

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

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 Arduino/C++ to build real-time embedded flight software for 1U CubeSat & light sail payload in LEO
- Developing code for memory constrained microcontrollers to interface w/ avionics (GPS, IMU) & 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 control UI, Elasticsearch/Kibana dashboards for mission critical telemetry data, and Nginx reverse proxy
- Converted backend from Clojure to Python to improve maintainability, achieving 40% code reduction

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

- Collaborated with group of highly-selective interns to conduct research studies with Raspberry Pi fleet, extend 50K line C++ open-source codebase to support network persistency, and present to 500+ interns & executives
- Evaluated feasibility of heterogeneous Information Centric Routing over IP using Named Data Networking

Johns Hopkins University Applied Physics Lab: Ground Software Engineering Intern *Summer 2023*

- Led team of interns through design & creation of Angular and Java based app for parsing binary 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

CognoTrain, Inc: Software Engineering Intern *Summer 2022*

- Pioneered patent pending cognitive training app for Alzheimer's patients using Flutter & APIs in startup setting

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 obj detect, odometry localization, state machines & PID control
- Developed multistage automation & CV algos which can autonomously generate paths to collect and shoot rings (even while moving) at 5 in target from anywhere on 12x12 ft field
- Created JavaFX simulator for path planning and replaying robot actions to enable testing w/o robot hardware

Programming Projects

- Rubik's Cube Solving Robot (C, Python), Arduino powered robot optimized to solve Rubik's Cube in 3-4 sec
    - Created OpenCV pipeline to scan cube and create Rubik's cube mosaic, breadboarded Arduino circuit
- Cache Simulator (C), Enables users to run detailed performance experiments by simulating accesses across different cache params. Outputs detailed stats/graphs, also supports writebacks and VI/MSI coherence protocols
- Happiness App, Social journaling app for users to track their mood and connect with friends. Created Flask & PostgreSQL backend API, React frontend UI, end-to-end encryption, and extensive unit tests/docs (100+ users)