JONATHAN MA

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Java | Python | Robotics | Web Dev | Automation | OpenCV

Education

Cornell University, College of Engineering (Ithaca, NY)   *Anticipated Graduation May 2025*
- Computer Science (BS), GPA: 4.03
- Selected Coursework: Data Structures (Java), Functional Programming (OCaml), Discrete Math, Multivariable Calculus, Linear Algebra, Analysis of Algorithms (Fall 2023)

Technical Skills

- Languages: Proficient in Java, Python, JavaScript, OCaml, HTML. Familiar with C++, Arduino, Dart, SQL
- Frameworks/Tools: Flask, React, Angular, Firebase, Flutter, OpenCV, JavaFX, Git, Docker, Linux, Postgres

Experience

Johns Hopkins University Applied Physics Lab: Ground Software Engineering Intern   *May 2023 - Present*
- Led team of interns through design and creation of Angular + Java 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

Cornell Space Systems Design Studio: Alpha CubeSat Software Engineer   *Oct 2022 - Present*
- Developing full-stack ground station software to communicate with solar powered light sail in Low Earth Orbit
- Converting backend from Clojure to Flask (Python) to improve maintainability, achieving 40% code reduction
- Building intuitive UI for CubeSat control using React and Bootstrap
- Using C++ to build embedded flight software for CubeSat payload and conducting extensive integration tests with hardware-in-the-loop
- Created dashboards for viewing mission critical satellite data using Elasticsearch and Kibana

CognoTrain, Inc: Software Engineering Intern   *June 2022 - Aug 2022*
- Pioneered patent pending cognitive training app to improve memory of Alzheimer's patients over time
- Utilized Flutter to design + build a personalized and accessible app on the Apple and Google Play stores
- Integrated backend user data and login with app using APIs to ensure seamless + secure user experience

First Tech Challenge Robotics Team #7303: Robot Automation Lead   *Aug 2019 - June 2022*
- Winning team at the 2021 Maryland Tech Invitational (out of the top 32 teams in the world), won Control Award for most innovative software control + automation algorithms
- Collaborated with team to implement and rapidly iterate over OpenCV object-detection pipelines, odometry localization algorithms, finite state machines & PIDF control loops
- Developed complex automation and CV algos to autonomously collect and 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, 50+ users
    - Implemented features such as end-to-end encryption and token-based authentication
    - Developed comprehensive unit test suite and documentation to validate backend functionality
- [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 (1.5K+ users)
- [Breadboard Simulator]() (Python), 2020 Silicon Valley Hackathon: Best Beginner Hack (out of 60 projects)