Michael Gonzalez

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LINKS

GitHub **mogonzal**
LinkedIn **michaelogonzalez7**
YouTube **Michael 4411S**

EDUCATION

Caltech
BS in MechE, BS in CS
Aug 2019 - Jun 2023 Pasadena, CA

- Frank W. Wood Research Fellow
- Henry Ford II Award Recipient
- Page House President
- GPA: 4.2

Carnegie Mellon University
SAMS Summer Program
Jun 2018 - Aug 2018 Pittsburgh, PA

- CS & Robotics Tracks

TERRA High School
Engineering Academy
Aug 2015 - Jun 2019 Miami, FL

- VEX Robotics State Champion
- Programming Club President
- National Honor Society VP
- GPA: 4.0

COURSEWORK

MechE: Mechanics • Thermal Science • Mechanical Prototyping • Design & Fabrication • Dimensional Analysis • Experiments and Modeling • Robotics

CS: Dedicability & Tractability • Algorithms • Computing Systems • Software Design • Distributed Computing • Leaning Systems & Machine Learning • Computer Graphics

SKILLS

Design & Simulation
SolidWorks • Inventor • Fusion 360 • AutoCAD • ANSYS • KiCad

Fabrication & Assembly
CNC • Mill • Lathe • Waterjet • Laser cutting • GD&T

Programming
Python • C • C++ • Java • Javascript • OCaml • MATLAB

Miscellaneous
Project management • Git • ROS

RELEVANT EXPERIENCE

Caltech Autonomous Robotics & Control Lab
Frank W. Wood SURF Research Fellow
Jun 2022 - Sep 2022 Pasadena, CA
Developed a UAV-based sampling method for high temperature, low pH volcanic lakes in order to predict volcanic eruptions. Responsible for the mechanical design, custom electronics, prototyping, and field testing of the sampler.

Independent Student Researcher
Jan 2022 - Present Pasadena, CA
Working part-time throughout the school year to assist on various projects. Was responsible throughout this time for the complete rehaul of the lab's autonomous flying ambulance, the design and manufacturing of low-gravity simulation surfaces, and the coordination of several UAV demonstrations.

Amazon.com, Inc.
Software Development Engineer Intern
Jun 2021 - Sep 2021 Tempe, AZ
Spent time in Multi-Channel Fulfillment as a full stack developer to create a plugin for third-party eCommerce platforms to automate shipping for their products. Responsible for overseeing all aspects of the project from the initial design to launch.

NASA Jet Propulsion Laboratory
Software Development Engineer Intern
Jun 2020 - Jan 2021 Pasadena, CA
Collaborated directly with leading cosmology and astrophysics researchers to translate their work into usable software, resulting in the LIMFAST program described below. Gave several presentations to other JPL scientists detailing the work and its applications in the field.

RECENT PROJECTS

Autonomous Flying Ambulance w/ Caltech ARCL
Overcoming the problem of road congestion during vehicle accidents by autonomously delivering medical supplies to the crash site, a much quicker alternative to current emergency response. Can also be used for scientific sample collection, package delivery, and other short-distance travel tasks.

Volcanic Lake Sampler w/ Caltech ARCL
A method of sampling water from volcanic lakes in order to provide consistent estimates of eruption times. While currently methods are passive and inconsistent, this autonomously actuated system improves trial success rates while eliminating problems like sample contamination and degassing.

LIMFAST w/ NASA JPL
Applies researched cosmological relationships to simulate a macroscopic view of the universe in its early stages and track various forms of radiation. Built upon the 21cmFAST framework, coded in C.
Publications: [1] [2] [3]

More
ME 72 Robotics Competition • Dual-Speed Transmission • Robotics CAD Library • WhoseCoin Cryptocurrency • Dynamic Storage Allocator