Aadhav Sivakumar

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Education

New York University, Tandon School of Engineering — Brooklyn, NY
Master's in Mechatronics and Robotics | GPA 3.95 — *Aug 2024 – May 2026*

University of California, Santa Cruz — Santa Cruz, CA
Bachelor's in Robotics Engineering, Minor in Electrical Engineering | GPA 3.8 — *June 2020 – June 2024*

Experience

Undergraduate Research Assistant — June 2023 – June 2024
UCSC Tactile Manipulation Lab — *Santa Cruz, CA*

- Designed and developed a sensor for a soft gripper that can be mounted on the end effector of a robotic arm, allowing objects to be sensed and grabbed simultaneously using varying pressures
- Sensor consists of flexible PCB, cypress Capsense chip, and custom molded and cured silicone

Electrical Engineering Instructor — Sep 2022 – Dec 2022
UCSC Sustainability Lab — *Santa Cruz, CA*

- Created and taught a 3 credit elective electronics course through the university, requiring technical support, project management skills, technical documentation, and procurement of electrical drawings and schematics
- Lectured to students about topics about the EDA workflow, including soldering and pcb designing/manufacturing
- Supervised projects that included electrical circuits, specifically the 555 timer circuit and a buck converter circuit

Learning Technologies Assistant — Sep 2021 – June 2022
UCSC Learning Support Services — *Santa Cruz, CA*

- Maintained and updated technologies within classrooms, including projectors, computers and recording hardware.
- Kept inventory and rented out equipment to organizations and students on campus
- Assessed and troubleshot computer problems brought by students, faculty and staff

Projects

SoleGait | *NYU Vertically Integrated Project* — Jan 2025 – Present

- Developed a smart shoe sole that track the gait and pressure of your foot as you walk or run
- Integrates force sensors with an Arduino Uno, transmitting the force and gyroscope data over UART to a computer to display real time data on MATLAB
- Won $500 prize for best design at the NYU 2025 capstone competition

SMART Compost Sorting | *Senior Capstone Project* — Sep 2023 – May 2024

- Created a solution for the problem of contaminated compost streams on UC Santa Cruz campus
- Used motors, motor drivers, force sensors, LEDs, and time of flight IR sensors controlled with an Arduino Mega
- Trained OpenCV Image recognition model to determine compost versus contaminant and remove it
- 3D space mapping with rotation matrices and planar equations to map the camera output to robot joint space

MATE ROV Competition Robot | *Slugbotics* — Sep 2021 – May 2023

- Created PCBs and other electrical circuits to control the movement and sensors of an underwater drone
- Designed CAD model for the inside of the waterproof enclosure housing the main electronics
- Coordinated troubleshooting and maintenance of power equipment

Technical Skills

Languages: C, C++, Python, ROS, MATLAB, Verilog, Java, HTML/CSS, Javascript, SQL
Boards: Arduino, Raspberry Pi, Digilent Basys 3 FPGA, STM32, ESP32, Parallax Propeller, BASIC Stamp 2
Hardware: Franka Research 3 (7 DOF robotic arm), NI DAQ, Google Glass, Bambu Lab printer, Glowforge
Software: Solidworks, Altium, EAGLE, Fusion 360, Cadence, Robosuite, WeBots, PSpice, AutoCAD
Other tools: AI image recognition, Communication protocols (SPI, I2C, UART), Inverse kinematics, PID control, Signal Filtering, Driver Creation/Calibration, Statics and Dynamics, ATI multi-axis force/torque, 9-axis IMU