Aadhav Sivakumar

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Education

New York University, Tandon School of Engineering — Brooklyn, NY
Master of Science in Mechatronics and Robotics | GPA 3.95 — *Aug 2024 – May 2026*
- **Relevant Coursework**: Reinforcement Learning & Optimal Control, Robot Perception, Advanced Mechatronics

University of California, Santa Cruz — Santa Cruz, CA
Bachelor of Science in Robotics Engineering, Minor in Electrical Engineering | GPA 3.8 — *Jun 2020 – Jun 2024*
- **Relevant Coursework**: Microcontroller System Design, Feedback Control Systems, Sensor Technologies

Experience

Robot Technician — Aug 2025 – Present
Starship Technologies — Fordham University Hub — *Bronx, NY*
- Diagnosing complex harware and software integration faults via root cause analysis to optimize fleet reliability.
- Executing component-level repairs on PCBs, cameras, and LiDAR sensors, ensuring precise calibration.

Robotics Graduate Teaching Assistant — Sep 2025 – Present
NYU Tandon School of Engineering — Math for Robotics and Foundations of Robotics courses — *Brooklyn, NY*
- Mentoring 50+ graduate students in robotics topics, like Jacobians, state-space modeling, and motion planning.
- Engineered a Python UR10e MuJoCo simulation to assess knowledge of forward/inverse kinematics and dynamics.

Machine Learning and AI Instructor — Jul 2025 – Aug 2025
NYU Tandon School of Engineering K-12 — IDEA program — *Brooklyn, NY*
- Designed ML curriculum, bridging from classical supervised/unsupervised algorithms to neural networks.
- Led implementation of predictive models on Kaggle datasets using Python, Scikit-learn, and TensorFlow.

Undergraduate Research Assistant — Jun 2023 – Jun 2024
UCSC Tactile Manipulation Lab — Professor Tae Myung Huh — *Santa Cruz, CA*
- Engineered soft robotic sensors using flexible PCBs and Infineon Capsense for multi-axis force detection.
- Deployed CUDA-accelerated Ubuntu environments on Nvidia RTX hardware for high-performance computer vision

Projects

3D SLAM Drone with Autonomous Landing | *Pixhawk, Nvidia Jetson, Intel RealSense* — Sep 2025 – Present
- Designing an autonomous quadcopter using Nvidia Jetson and RealSense for real-time SLAM, orchestrating fleet coordination with payload-carrying UGVs for precision pesticide application in orchards.

SoleGait Foot Sensor | *Arduino, MATLAB, UART, Embedded C, Sensors* — Jan 2025 – Present
- Developing a smart wearable to capture high-fidelity gait biomechanics, processing force sensor data via Arduino and visualizing real-time telemetry through a custom MATLAB-UART interface (Won best design at NYU capstone competition)

CV Controlled Desktop Arm | *Raspberry Pi, YOLO, MediaPipe, Python* — Jun 2025 – Present
- Creating a 3D-printed manipulator driven by Raspberry Pi, deploying an YOLO and MediaPipe driven computer vision pipeline to translate hand gestures into real-time inverse kinematics trajectories.

Glass-2-Bot | *C++, Raspberry Pi, A OpenCV, I2C* — Apr 2025 – May 2025
- Architected a dual-microcontroller mobile robot executing C++ state machines for object retrieval, utilizing python OpenCV-based object detection on Google Glass video streams for hands-free target selection.

SMART Compost Sorting | *OpenCV, DexNet, Orbec Astra, Franka Panda* — Sep 2023 – May 2024
- Implemented DexNet to identify compost contaminants, computing 3D spatial transformation matrices to map depth camera coordinates to robot joint space for precise autonomous grasping for pollutant removal.

Stockbot: Grocery Robotics | *MuJoCo, PID Control, Franka Panda, Data Analysis* — Feb 2024 – Mar 2024
- Tuned PID feedback controllers on a 7-DOF Franka Panda arm to optimize manipulation trajectories, creating framework to benchmark automated restocking cycle times against human performance.

Technical Skills

Programming: C/C++, Python (PyTorch, TensorFlow, pandas, scikit, OpenCV), Linux, Git, MATLAB, Verilog
Robotics: ROS 2, Embedded (STM32, ESP32, RPi, FPGA, RTOS), Franka Arm, PID control, I2C/SPI/UART/CAN
Software: Solidworks, Altium, EAGLE, Cadence, Mujoco, WeBots, Bambu Studio, NI LogicWorks, Visual Studio