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

PROFESSIONAL EXPERIENCE

Robotics Graduate Teaching Assistant — Sep 2025 – Present
NYU Tandon School of Engineering — Math for Robotics and Foundations of Robotics courses — *Brooklyn, NY*
- Facilitated graduate-level coursework in Robotics for 80+ students, delving into complex concepts including Jacobian-based inverse kinematics, state-space control, and motion planning algorithms.
- Created a Python UR10e MuJoCo simulation to assess knowledge of forward/inverse kinematics and dynamics.

Robot Technician — Aug 2025 – Present
Starship Technologies — Fordham University Hub — *Bronx, NY*
- Reduced field downtime 50% via Python & Bash scripts for on-site Linux system debugging on edge devices.
- Executed precise sensor alignment and hardware repair on LiDAR & cameras to ensure reliability.

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 25 international students through predictive model implementation on Kaggle datasets using Python/Scikit.

Undergraduate Research Assistant — Jun 2023 – Jun 2024
UCSC Tactile Manipulation Lab — Professor Tae Myung Huh — *Santa Cruz, CA*
- Developed soft robotic CapSense tactile sensors on flexible PCBs, enabling slip-based reorientation at 78% success.
- Deployed CUDA-accelerated Ubuntu environment on Nvidia GPU for high-performance computer vision.

PROJECTS

3D SLAM Drone with Autonomous Landing | *Pixhawk, Nvidia Jetson, Intel RealSense* — Sep 2025 – Present
- Integrated Nvidia Jetson and RealSense hardware to enable real-time 3D SLAM, integrating edge-compute hardware to support real-time inference pipelines in unstructured outdoor environments.

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

Glass-2-Bot | *C++, Raspberry Pi, 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.

SoleGait Foot Sensor | *Arduino, MATLAB, UART, Embedded C, Sensors* — Jan 2025 – Jun 2025
- Won best design at the 2025 NYU Tandon Capstone Project Competition, securing $500 in capital.
- With a biomedical devices project team, made a smart wearable to capture high-fidelity gait biomechanics, processing force sensor data via Arduino and visualizing realtime telemetry through a MATLAB-UART interface.

SMART Compost Sorting | *OpenCV, DexNet, Orbec Astra, Franka Panda* — Sep 2023 – May 2024
- Enabled sim-to-real transfer via DexNet, computing 3D spatial transformation matrices to map depth camera coordinates to robot joint space for precise autonomous contaminant removal for undergrad capstone.

Stockbot: Grocery Robotics | *MuJoCo, PID Control, Franka Panda* — 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, numpy), Linux, Git, Bash, SSH, Verilog
Robotics: ROS 2, Embedded (STM32, ESP32, RPi, FPGA, RTOS), Franka Arm, I2C/SPI/UART/CAN, TCP/IP
Software: Isaac Sim, MuJoCo, WeBots, MoveIt, Solidworks, Altium, Cadence, Bambu Studio, Docker, Visual Studio