MAYSARAH SUKKAR

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EDUCATION

Columbia University — New York, NY
MS in Mechanical Engineering, Concentration in Robotics and Control Systems — Expected Dec 2026
GPA: 4.06
Relevant Coursework: Industrial Automation, Non-Linear and Adaptive Control, Robot Learning, Mechatronics

Boston University — Boston, MA
BS in Mechanical Engineering, Concentration in Robotics — May 2025
Relevant Coursework: Medical Robotics, Introduction to Robotics, Control Systems, Linear Algebra, Dynamics

SKILLS

Fabrication: 3D Printer, Waterjet, Laser Cutting Machine, Mill, Lathe, CNC, Drill Press, Band Saw, Miter Saw
Software: SolidWorks, MATLAB, Simulink, Linux, ROS2, Python, C++, KiCad, LabVIEW, FEA, Onshape, ANSYS, MS Office
Simulation: MuJoCo, Simulink, ANSYS Fluent (CFD), COMSOL

WORK AND RESEARCH EXPERIENCE

Non-Linear Control Group — New York, NY
Robotics and Control Lead — Sep 2025 - Sep 2026

- Programmed ROS2 perception and navigation pipelines for the mobile manipulator, integrating OAK depth camera data with EKF-based sensor fusion to cut pose estimation error by 20% and reduce navigation retries in cluttered indoor environments.
- Directed a 6-person team to build a 7-DOF robotic arm on a custom ROS2-enabled cart with camera vision and depth perception, improving object detection by 40% and mapping speed by 30% for autonomous indoor retrieval.

HaloBraid — Cambridge, MA
Robotics and Mechatronics Intern — Jun 2026 - Aug 2026

- Overhauled the mechanical design of a complex motion system, cutting actuator count from 3 to 1 and part count by 40%.
- Reduced prototype iteration time by 70% by applying DFMA principles to complex geometries, minimizing rework between successive design cycles and streamlining the transition from early-stage prototypes to robust, mass-production-ready parts.
- Devised and fabricated a custom force-logging test rig that automated an error-prone manual testing process, achieving 0.5% measurement accuracy with fully logged data, and deployed it across the company's US and UK offices.

Robotics & Autonomous Systems Teaching & Innovation Center (RASTIC) — Boston, MA
Operations Lead — Jan 2024 - May 2025

- Coached 50+ undergraduate and graduate students across CAD, Computer Vision, Electronics, Embedded Systems, and Soft Robotics, delivering 30+ robotics and autonomous systems projects each term.
- Supervised a 7-person student team to build and maintain a live inventory system for ~$22K in lab equipment and consumables; systematized tracking across 10+ storage zones and sustained 95% item accountability through quarterly audits.

PROJECTS

BiPedal Robot — Sep 2025 - Present

- Built a ROS2-based 8-DOF bipedal platform with IMU and contact sensing and an auto-tuned LQR balance controller; traced the sim-to-real gap to servo lag, deadband and sensing, driving a redesign.
- Designed a modular chassis via simulation and iterative 3D printing, cutting structural weight by 20% while maintaining rigidity.
- Trained PPO gait policies in MuJoCo across 384 parallel environments; the final policy averaged 66 cm/s over 282 evaluation episodes and walked full 8 s rollouts without falling.

Autonomous Solar Panel Cleaning System - Lead Mechanical Engineer — Nov 2025 - May 2026

- Spearheaded a 6-engineer Purdue–Columbia team to an award-winning cooperative 2-robot solar-panel cleaning system at MassRobotics Form & Function, coordinating 6 industry sponsors across 3 subsystems from design through competition.
- Engineered the carrier robot's drivetrain of 4 hoverboard BLDC motors, interfaced via an ESP32 bridged to an AMD mini-PC for closed-loop control with live feedback, carrying and positioning a scissor lift and 6-DOF Stewart platform that aligns the dock.
- Automated cleaner navigation via Bayesian fusion of 3 IR cliff sensors for panel-edge detection and row sweeping over BLE.

LANGUAGES

Advanced: French | **Conversational:** Arabic, Italian