

# DAVID BARSOUM

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## EDUCATION

### Olin College of Engineering, B.S. Robotics and Mechanical Engineering 2027

- GPA: 4.0/4.0. Coursework: Computational and Fundamental Robotics, Thermodynamics, Linear Algebra, Modeling & Simulation

### Worcester Polytechnic Institute via Massachusetts Academy of Math and Science 2022 - 2024

- *Dual-enrolled during my senior year of high school as a full-time freshman at WPI.*
- GPA: 4.0/4.0. Relevant coursework: Intro to Robotics Engineering, Assembly Language, Intro to Electrical Engineering. Multivariable calculus.

## SKILLS

- **Programming:** ROS2, Rviz2, Docker, Gazebo, Python, C/C++, Java, Git, Linux, Arduino & Raspberry Pi, MySQL & Firebase.
- **Mechanical:** SolidWorks, Ansys, Fusion360 CAM, OnShape, CNC Mill & Router, Formlabs printers, machine shop tools.
- **Mathematics:** MATLAB, Mathematical modeling, statistics.
- **Languages:** Spanish (Advanced Proficient), Arabic (Proficient), English (native).

## EXPERIENCE

### Robotics Engineering Intern (3<sup>rd</sup> Employee) | ReviMo @ Mass Robotics Jun 2025 - Aug 2025

- Machined and prototyped the Gen-4 device, logging ~100 hours on CNC mills and utilizing Fusion 360 CAM.
- Optimized part geometry for manufacturability, reducing machining cycle time by 20% and simplifying assembly.
- Engineered an automated fatigue testing rig to identify and resolve mechanical failure modes.
- Demonstrated functional prototypes to high-level stakeholders, including Massachusetts State Senators.

### Software Testing Intern | Evolv Technology Jun 2024 - Aug 2024

- Developed randomized traffic flow testing module using Python/PyTest for 4K+ weapon detection scanners worldwide.
- Designed and deployed testing module onto embedded Linux devices (BeagleBone) hosting APIs (Flask) for testing scanners.
- Integrated testing devices with Evolv's CI/CD pipeline (Git, BitBucket, Jira, CircleCI) which runs daily.
- Coordinated with 5+ engineers to document and replicate testing hardware to be used across departments.
- Tested 50+ hours of simulated traffic on physical scanners and exposed critical errors (memory leak/performance issues).

### Co-President | FIRST Robotics Team 190 Aug 2022 - May 2024

- Designed 10+ robot components with SolidWorks, created CAM paths with Fusion360, machined parts on CNC mills/routers.
- Led robotic development with 30+ students on the club team for the 2 consecutive years of FIRST Robotics competitions.
- Coordinated manufacturing, designing, and software projects, winning the 1<sup>st</sup> place engineering award (Excellence Award).
- Grew robotics team by over 70% and sought donors for a multi-million-dollar FIRST robotics facility for the FRC 190 team.

## PROJECTS

### Autonomous Vertical-Climbing Robot (Scribblez) | Ansys Fluent, ROS2, Python Nov - Dec 2025

- Managed a team of five to engineer a vertical-climbing robot, "Scribblez", capable of traversing glass surfaces to draw user-uploaded art, integrating a custom centrifugal impeller system with a ROS2 navigation stack on a Raspberry Pi.
- Optimized impeller fluid dynamics using Ansys Fluent, iterating on blade geometry to achieve ~10 kPa of suction pressure, and validated simulation results through physical bench testing.
- Implemented a ROS2 navigation stack fusing LiDAR and IMU data into a PID control loop to compensate for wheel slippage.

### ROS2 Particle Filter & Robot Control | C++, ROS2, Python, Docker Oct 2025

- Implemented a Particle Filter in C++ to localize a robot, debugging and visualizing with Rviz2 and Gazebo.
- Developed wall-following and obstacle avoidance algorithms; programmed robot with ROS2 and Python in a Docker container.

### Assistive Wheelchair-Mounted Frisbee Launcher | OnShape, Physics, CNC Tools Feb 2023 - May 2023

- Led a team of 4 to design a wheelchair-mounted frisbee launcher to enable individuals with limited mobility play with their pets.
- Designed 5+ parts using OnShape, integrating a car window motor, spring, and gearbox to launch frisbee like a clay pigeon.
- Modeled mechanical stress using physics to determine required strength of parts and optimal gear ratios.

## AWARDS

- **High School Mathematical Contest in Modeling (HiMCM):** 1<sup>st</sup> place rank of 950+ global teams (Outstanding NCTM Award).
- **International Math Modeling Challenge:** #1 U.S. Team out of 216 (Regional Outstanding Award).
- **Division Champions at FIRST Robotics World Championship in Houston '24** (3/80 teams).