Max Lazer Berman

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EDUCATION

Worcester Polytechnic Institute (WPI), Worcester, MA
Bachelor of Science in Robotics Engineering (RBE), May 2025

SKILLS

Programming: Java, C, C++, Python, MATLAB, SQL, Robot Operating System (ROS), ROS2
Other: Wiring/Soldering, Git/Github, Linux, Arduino/IoT, Solidworks & Onshape CAD, Fusion 360 CAM

PROJECTS/EXPERIENCE

Major Qualifying Project: SailBot 2024-2025, WPI, *August 2024 - June 2025*
- Improved an autonomous sailing robot for the International Robotic Sailing Competition, earning 2nd place overall.
- Increased mechanical and control system robustness by designing a new wingsail with a rotational damper and developing a main hull PCB, utilizing a Jetson Orin Nano running ROS2.

Artificial Intelligence for Robotics, WPI, *January 2025 - March 2025*
- Applied graph search, optimization techniques, and machine learning to robotics problems.
- Developed an AI agent for a simplified Bomberman game, using A* search and a state machine to optimize survival strategies across multiple scenarios.

HUA Practicum: Musical Robotics - Electromagnet Guitar, WPI, *October 2024 - December 2024*
- Developed a self-contained electromagnet-driven guitar that enables new playing methods while preserving traditional techniques.
- Utilized capacitance touch sensors to detect the active fret, with an Arduino UNO determining the frequencies sent to each electromagnet.

MIT BWSI: Autonomous Underwater Vehicle Challenge TA, MIT, *July 2023 - August 2023*
- Worked as a teaching assistant for a summer high school course about AUVs at MIT.
- The course curriculum included vector math, control theory with sensors, and vision processing with lane detection and AprilTags to navigate the robot around in a pool using C++ and Python.

Interactive Qualifying Project: Fully Automated Dual Tank Fertilizer Mixing System, Venice, Italy, *January 2024 - March 2024*
- Designed a prototype for a dual tank fertigation system and developed a control system for NESS Fertigation.
- Analyzed environmental impact of the system using a Rapid Impact Assessment Matrix (RIAM).

Unified Robotics: III-IV, WPI, *August 2023 - December 2023*
- Developed and programmed robotic systems using MATLAB, Python, and ROS.
- Implemented SLAM for mapping, A* for path planning, and Pure Pursuit for navigation on a Turtlebot3 Burger robot.
- Used Augmented Monte Carlo Localization (AMCL) to determine the robot's position in a mapped environment.
- Programmed a 4-DoF robotic arm to pick up and sort colored objects using HSV/RGB filtering and inverse kinematics.

CS Software Engineering: Frontend Developer and Documentation Analyst, WPI, *March 2023 - May 2023*
- Worked with 10 developers in a company-style environment to create an application for Brigham & Women's Hospital.
- Integrated a robot into the application with manual controls and automatic computer vision navigation with AprilTags.
- Led creation of project deliverables including class diagrams, UML Activity Diagrams, User Stories, and User Manual.

Gompei and the H.E.R.D. FIRST Robotics Competition Team 190: Mentor, WPI, *August 2021 - Present*
- Programmed a robot with autonomous functions including a 360 degree turret that tracks a target and an adjustable flywheel and hood for launching game objects at variable distances.
- Led programming a robot with an adjustable pivot, elevator, and wrist which can place cone and cube shaped objects at different heights using state machine style programming.