Bryce Martis

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Education

Worcester Polytechnic Institute | B.S. candidate, Robotics Engineering | GPA: 3.96/4.0 Expected May 2028
Minor: Electrical and Computer Engineering | Concentration: Signal Processing
Honors: Dean's List; Presidential Scholarship; Florence Evans Bushee Foundation Scholarship; Charles O. Thompson Scholar
Relevant coursework: Robotics Embedded Systems; Mechanical Applications in Robotics; Control Engineering I; Sensing and Perception in Robotics; Manipulation in Robotics; Systems Programming with C

Technical Skills

Languages: C++, C, C#, Python, MATLAB, Java
Robotics & Embedded: ESP32, ATmega32U4, Raspberry Pi/Pico, PID control, servo/stepper control, motor drivers, FDM 3D printing, Dynamixel SDK
Software & Tools: SolidWorks, OpenCV, Unreal Engine 5/Blueprints, Unity 6.3, Node.js, Three.js, Blender, Git/Git LFS, Linux

Technical Experience

Volunteer Research Assistant | WPI AVMI Sep 2026–Present
- Support research integrating simulated LiDAR and camera data with physical sensor data for real-time autonomous robotic systems.

XR Specialist | The Global Lab at WPI Mar 2026–Present
- Built a Meta Quest study-abroad experience in Unreal Engine 5, used by WPI students, the provost, and admissions; implemented local 360° video loading and transitions and map-based site selection interface.
- Built a Node.js/Three.js spectator client so people outside the headset can observe the VR user's activity.
- Extended a Worcester digital twin used by city officials with urban heat and heat-vulnerable building visualizations, model insertion/manipulation tools, and a tablet-style UI; upgraded UI/XR systems to Unity 6.3.

Technical Projects

3-DOF Robotic Arm 2026–Present
- Designed and built a 3D-printed arm in SolidWorks with base-mounted NEMA 17 motors, spur gears, and dual four-bar linkages; designed the mechanism to concentrate mass near the base and used a spur-gear transmission to manage end-effector torque demands. Built for a future rover platform.
- Assembled custom power and motor-driver circuitry using A4988 breakout boards and soldered protoboard wiring.
- Implemented C/C++ inverse kinematics and motion control on ESP32-WROOM; physical arm executes XYZ target sequences.

Robotic Arm and Rover for Shelf Pick-and-Place | RBE 2001 Final Project 2026
- Designed a 2-DOF robotic arm in SolidWorks for shelf pick-and-place tasks, incorporating four-bar linkages, a servo-driven gripper, and custom 3D-printed parts.
- Developed embedded C++ firmware on an ATmega32U4 to process wheel encoders for rover forward kinematics, generate motor commands through inverse kinematics, and control servomotor-based arm manipulation and gripper actuation.

Vision-Guided Robotic Ball Sorting | RBE 3001 Final Project 2026
- Built a MATLAB vision-guided pick-and-place system for a 4-DOF OpenMANIPULATOR-X, using HSV segmentation, blob filtering, and centroid detection to sort balls by color.
- Calibrated a fisheye camera to 0.64px average reprojection error using checkerboard pose estimation and homogeneous transforms to map image points into the robot's frame, with a correction for ball height. A geometric inverse kinematics solver and cubic/quintic task-space trajectories drove the arm's motion.

Face Tracking Social Robot 2024
- Designed and built a battery-powered robot using SolidWorks, with seven microservos and compact eye/mouth linkages; integrated Python/C and OpenCV face tracking on Raspberry Pi 5 with Pico servo control over USB serial and gamepad-controlled expressions.

Uploaded | Solo Multiplayer Game Developer 2019–2020
- Solo-developed and released a Steam game using Unreal Engine 4 and C++; implemented multiplayer network replication and synchronized player movement and created original art, audio, and 3D assets.

Leadership and Additional Experience

Community Advisor | WPI Insight Program Aug 2025–Present
- Mentor first-year cohorts of 11 and 40 students across two years; provide individual support and presentations on time management, social adjustment, and transitioning to college life.