

Marcus Hurt

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OBJECTIVE

Robotics software engineer, 4+ years shipping production robot software (ROS 2, ABB, Beckhoff PLCs). Seeking Boston-area robotics software roles from January 2027.

EDUCATION

University of Maryland

College Park, MD

Master of Engineering in Robotics, GPA: 3.96/4.00

Sept. 2024 – Dec. 2026 (expected)

- Relevant Courses: Perception, Autonomous Robotics, Planning, Robot Modeling, Control of Robotic Systems, Software Engineering

University of Michigan

Ann Arbor, MI

Bachelor of Science in Computer Engineering

Graduated April 2023

- Relevant Courses: Advanced Embedded Systems, Embedded Control Systems, Computer Vision, Operating Systems, Data Structures & Algorithms

EXPERIENCE

Robotics Engineer

Sept. 2023 – Present

Optimax Systems, Inc.

Rochester, NY

- Work with a small team to develop and deploy robot and PLC code to the manufacturing floor
- Introduced CI/CD to both the ROS 2 and TwinCAT PLC projects and remain its primary owner: GitLab CI pipelines, Docker builds, test runners, versioned releases
- Develop in ROS 2 (C++, Python) and TwinCAT Structured Text, integrating ABB robots with PLC-controlled machines
- Scrum master for the ROS 2 and PLC software teams: sprint planning, estimation, reviews, retrospectives

Robotics Software Intern

June 2021 – Dec. 2022

Optimax Systems, Inc.

Rochester, NY

- Built Python, MATLAB, and JavaScript GUIs interfacing ABB robot arms with tool-path algorithms
- Brought robot calibration code under version control and cut the code base in half
- Set up Git workflows to deploy and test code revisions from development to the manufacturing floor

TECHNICAL SKILLS

Languages: C/C++, Python, Structured Text (IEC 61131-3), RAPID (ABB), MATLAB

Robotics: ROS 2, Beckhoff TwinCAT, ABB robotic arms

Tools: Git, GitLab CI, Docker, Google Test, TcUnit, pytest, Linux (Ubuntu), Raspberry Pi, Arduino

PROJECTS

Sentinel: Autonomous Indoor Patrol Robot | ROS 2 Jazzy, C++, Nav2, Raspberry Pi 5

Summer 2026

- Built a 3D-printed 4WD robot with lidar SLAM (slam_toolbox), wheel/IMU EKF fusion, and Nav2 navigation
- Wrote a ros2_control serial hardware interface to Arduino motor firmware with per-side PID and a watchdog

Monocular Visual Odometry and Local-Map SLAM | Python, OpenCV

Spring 2026

- Compared pairwise essential-matrix VO against local-map SLAM (PnP-RANSAC on a 3D landmark cloud) on robot video
- Long-baseline keyframe selection cut closed-loop drift 4.8×, to 2.7% (5.4 cm end-point error on a 2.0 m loop)

Autonomous Block-Retrieval Robot | Python, OpenCV, Raspberry Pi 4B

Spring 2026

- Built a robot that autonomously finds colored blocks in a 7×7 ft arena and delivers them to a collection zone using a state machine and grid search
- Implemented HSV color detection, hardware-timed encoder odometry, IMU heading, and ultrasonic wall localization

Earlier Embedded Projects | C, PCB Design, I2C/UART, LoRa

2021 – 2022

- TVC hopper: designed power and flight-computer PCBs for an EDF hopper with altitude/attitude control
- Forest health sensor array: I2C sensors with LTE/LoRa modules over UART, relaying data to a central hub over LoRa