# Noah Hathout

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## Education

**Boston University** **Expected Dec 2026**
*M.S. in Robotics & Autonomous Systems (with Thesis)* *Boston, MA*
- Thesis in progress, conducted in partnership with Universal Robots: learning-based robotic manipulation.

**Boston University** **May 2025**
*B.S. in Computer Engineering, Machine Learning Concentration | GPA: 3.73/4.00, cum laude* *Boston, MA*
- Coursework: Robot Learning; Vision, Robotics & Planning; Image & Video Computing; Embedded Systems; ML/DL/RL.

## Skills

**Languages:** Python, C, C++, C#, Java, JavaScript, MATLAB/Simulink, SQL
**Robotics & Embedded:** ROS 2, Linux, Docker, UR5e/UR10e, NVIDIA Jetson, Raspberry Pi, BeagleBone Black, ESP32
**ML & Perception:** PyTorch, TensorFlow, OpenCV, MobileNetV3, YOLOv8, ViT/DINO, Visual SLAM, depth cameras
**Engineering Tools:** Git/GitHub, GitHub Actions, pytest, SQLite, FastAPI, OnShape, JIRA, Bitbucket

## Experience

**Universal Robots** **Jun 2026 – Present**
*AI Engineer Intern (M.S. Thesis)* *North Reading, MA · Hybrid*
- Conducting M.S. thesis research in an industry R&D setting, applying learned policies to real robotic manipulation.
- Developing robotics software and running model experimentation, evaluation, and integration on physical UR systems.

**UMG Technologies, Inc.** **Jun 2025 – Present**
*Lead Software Engineer* *Danvers, MA · Hybrid*
- Modernizing a legacy C# industrial automation platform into a maintainable 64-bit codebase.
- Migrated the engineering workflow to GitHub with structured releases and protected branches, accelerating production debugging under tight customer deadlines.
- Designed, deployed, and maintain the company's next-generation full-stack corporate website.

**Universal Robots** **May 2024 – Aug 2024**
*R&D Intern, Innovation Lab* *Odense, Denmark · On-site*
- Led a computer vision project integrating depth-sensing cameras into collaborative robot workflows.
- Built real-time, containerized robotics software with ROS 2, C++/Python, NVIDIA libraries, and Docker.
- Delivered a final live demo while collaborating in an agile workflow using Bitbucket and JIRA.

## Projects

**From Pixels to Poses — Monocular 6-DoF Camera Pose Regression** **Feb 2026 – May 2026**
- Benchmarked CNN, ViT, and DINO backbones for APR-style camera pose regression on indoor (MS 7-Scenes) and outdoor (Extended Cambridge/KingsCollege) datasets.
- Trained per-scene pose-regression models, evaluated position/orientation error, and interpreted predictions with Grad-CAM and patch-token attribution.

**TrashformerPro — Raspberry Pi Smart-Bin Waste Classifier** **Jan 2026 – May 2026**
- Built a low-cost embedded waste-classification prototype on a Raspberry Pi 5 with an upward-facing camera, acrylic sorting plate, LED/buzzer feedback, web app, and runtime logging for continual fine-tuning.
- Deployed a MobileNetV3-Large four-class classifier with empty-plate differencing and confidence-gated inference, reaching **95.3% test accuracy** after on-device feedback fine-tuning.

**BROS2 (Block ROS 2) — Visual IDE for ROS 2** | *Best Project, Fall 2025 (EC601)* **Sep 2025 – Jun 2026**
- Built a cross-platform desktop IDE for composing ROS 2 computation graphs via a drag-and-drop block interface.
- Implemented a Docker-based ROS runner that provisions workspaces and executes ROS 2 commands in reproducible macOS/Linux environments.

**Pollux — Autonomous Surface-Disinfecting Robot** **Sep 2024 – May 2025**
- Designed a ROS 2 mobile robot that disinfects surfaces with UV-C LEDs while avoiding obstacles and cliffs.
- Developed a custom PPO reward structure achieving 60%+ simulated coverage with zero edge violations.
- Integrated ultrasonic and IMU sensing into a real-time perception stack on a Raspberry Pi 4B.

**Additional Projects:** *TiltGolf* – BeagleBone IMU kernel driver + Qt/Box2D game · *PIRA* – ESP32 RTOS + multi-robot logging · *SuperTuxSmart* – RL reward shaping for game control · *ChatSheetsAI* – CSV/NL-to-SQLite analysis tool

**Affiliations:** IEEE (Student Member)