

# Ishaan Salian

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## Education

### University of Massachusetts Amherst

Bachelor of Science in Computer Engineering

Amherst, MA

Graduated May 2025

- **Awards:** Chancellor's Award (\$56,000), Dean's List
- **Coursework:** Digital Design, Systems Programming, Networked Embedded Systems, Low Power Embedded Systems, Computer Architecture, Synthesis and Verification of Digital Systems, Electronic Circuits, Artificial Intelligence

## Technical Skills

**Embedded Development:** C, ESP32/nRF52 SDK, bare-metal ARM Cortex-M, GDB, interrupt-driven programming

**Hardware Design:** KiCad, oscilloscope debugging, I2C/SPI/UART protocol implementation, soldering/rework

**Programming:** Python, C++, MATLAB, Bash scripting

**Tools:** Git, Linux, Fusion 360, OpenCV, Quartus Prime

## Experience

### Coherent Corp.

Controls and Electrical Engineering Intern

East Granby, CT

June 2024 - August 2024

- Debugged fiber length measurement error caused by counter overflow in Allen-Bradley CompactLogix PLC
- Implemented hybrid solution using DINT counter with float variable conversion to prevent precision loss while maintaining accuracy, cutting fiber scrap and improving production yield consistency
- Designed and prototyped gravity-fed alcohol drip system; reducing belt friction and improving fiber surface quality

### Riccio College of Engineering

Undergraduate Teaching Assistant

Amherst, MA

Various Courses

- Assisted in Physical Computing, ECE Junior Design, and Security Engineering courses; guided 50+ students through bare-metal C programming, hardware debugging, and secure embedded system design

## Projects

### Autonomous Workspace Organizer Robot | KiCad, Fusion 360, BLE, Object Detection

Senior Design Project

- Designed custom ESP32-S3 control PCB (4-layer, USB-C, onboard level shifter) integrating 5V boost converter with BMS; powered Parallax 360 degree continuous rotation servos driving custom designed tracked-based chassis
- Integrated custom-trained YOLOv8 instance segmentation model (via Roboflow) with camera calibration ( $12 \times 8$  chessboard, 2.1cm squares); achieved reliable object classification for 5-10 items
- Implemented BLE protocol between robot and NVIDIA Jetson Nano with custom model; achieved 98% human absence detection accuracy

### Ultra-Low-Power Weather Station | C, Nordic nRF52832, ePaper display

April 2025

- Designed weather monitor on nRF52832 using Waveshare 2.13" ePaper display and environmental sensors via I2C
- Implemented barometric pressure trend analysis using 30-minute circular buffer; calculating thresholds for prediction
- Optimized firmware using Nordic SDK with RTC-triggered wakeups; ePaper bistability minimized power consumption

### keyRING, a Smart Key Holder - HackUMASS XI | ATmega328P, HC-SR04, Embedded C

November 2023

- Built key detection system with custom NC switch and ultrasonic doorway sensor using bare-metal C with software debouncing and 3-state logic (Idle → Doorway Event → Alert Check) to correlate door passage with key presence
- Delivered functional prototype on a strict budget; recognized with "Cheapest Hardware Hack" award

## Organizations

### Liaison - Institute of Electrical and Electronics Engineers (IEEE)

March 2024 - March 2025

- Organized 5+ events with engineering organizations, facilitating technical workshops and industry speaker sessions

### Electronics Co-Lead - UMass Mechatronics Team (ASME)

September 2023 - May 2024

- Co-led electronics subteam for Mini-Golf Robot; integrated dual-arm swing mechanism using NEMA23 stepper motors with M542C precision drivers for torque-controlled putting and chipping
- Implemented Bluetooth control system using Bluepad32 library with Xbox One controller input mapping; developed Arduino firmware for drivetrain control (L298N H-bridge driving DC motors) and swing actuation
- Contributed to team's top-5 placement through iterative subsystem testing and cross-functional coordination