Ishaan Salian

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Education

University of Massachusetts Amherst **Amherst, MA**
Bachelor of Science in Computer Engineering **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/STM32/nRF52 SDK, GDB, interrupt-driven programming
Hardware Design: KiCad, oscilloscope debugging, I2C/SPI/CAN/UART, BLE, soldering/rework
Software: Python, C++, MATLAB, Bash scripting, Git, Linux, RTOS, Fusion 360, OpenCV, Quartus Prime

Experience

Dynamic and Autonomous Robotic Systems Laboratory **Amherst, MA**
PCB Design Engineer **November 2025 - Present**

- Designing high-power 48V motor control PCBs for the Dash humanoid robot project, including component selection for three-phase power stages, buck converter power supplies, and thermal management for 80V-rated MOSFETs
- Implementing 4-layer PCB layouts with copper power planes, 180+ thermal vias, and low-inductance ground planes to minimize switching noise and ensure reliable high-current operation in dynamic robotic applications

Coherent Corp. **East Granby, CT**
Controls and Electrical Engineering Intern **June 2024 - August 2024**

- Assisted in complete controls upgrade of fibre manufacturing equipment, resulting in improved operational efficiency
- Debugged Allen-Bradley PLC measurement error caused by counter overflow; implemented hybrid solution using DINT counter with float variable conversion to prevent precision loss while maintaining accuracy, and cutting fiber scrap

Riccio College of Engineering **Amherst, MA**
Undergraduate Teaching Assistant **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
- Implemented BLE protocol between robot and overhead NVIDIA Jetson Nano running OpenCV object detection
- Integrated custom-trained YOLOv8 instance segmentation model (via Roboflow) with camera calibration (12×8 chessboard, 2.1cm squares); achieved reliable object classification for 5-10 items

FreeRTOS based Multi-Sensor Data Logger | *ESP32, FreeRTOS*

- Developed FreeRTOS-based system with 5 concurrent tasks managing multi-rate sensor acquisition (100Hz, 1Hz, 0.5Hz) with mutex-protected shared I2C bus; implemented real-time sensor data logging to an SD card for behavior analysis
- Resolved priority inversion causing IMU sample loss when lower priority task held mutex during 150ms blocking reads, through timeout adjustments and task scheduling modifications

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

- 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

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, contributing to team's top-5 placement
- 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