

Ishaan Salian

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Education

University of Massachusetts Amherst <i>Bachelor of Science in Computer Engineering</i>	Amherst, MA Graduated May 2025
<ul style="list-style-type: none">• 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, soldering/rework
Software: Python, C++, MATLAB, Bash scripting, Git, Linux, RTOS, Fusion 360, OpenCV, Quartus Prime

Experience

Coherent Corp. <i>Controls and Electrical Engineering Intern</i>	East Granby, CT June 2024 - August 2024
<ul style="list-style-type: none">• 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 <i>Undergraduate Teaching Assistant</i>	Amherst, MA Various Courses
<ul style="list-style-type: none">• 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 <i>KiCad, Fusion 360, BLE, Object Detection</i>	Senior Design Project
<ul style="list-style-type: none">• 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 <i>ESP32, FreeRTOS</i>	
<ul style="list-style-type: none">• 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 <i>C, Nordic nRF52832, ePaper display</i>	
<ul style="list-style-type: none">• 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 <i>ATmega328P, HC-SR04, Embedded C</i>	
<ul style="list-style-type: none">• 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	

Organizations

Liaison - Institute of Electrical and Electronics Engineers (IEEE)	March 2024 - March 2025
<ul style="list-style-type: none">• Organized 5+ events with engineering organizations, facilitating technical workshops and industry speaker sessions	
Electronics Co-Lead - UMass Mechatronics Team (ASME)	September 2023 - May 2024
<ul style="list-style-type: none">• 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	