

Ahmad Ali

Fullstack Software Development | IoT & Embedded Systems | Control & Power Systems | PCB Design & Hardware Debugging | AI & Memory Optimization

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SKILLS

Hardware

Microcontrollers (Arduino Raspberry Pi ESP32 STM32 Texas Instruments)		Sensors & actuators (GPIO)	
Serial Communication (UART SPI I2C CAN)	PCB Design (Altium KiCad)	PID Tuning	Telemetry (Radio WiFi BLE)
Motor Control (BLDC Induction Servo PMSM)	Battery Management Systems (BMS)		
Power Converters (Buck/Boost DC-AC Inverters Rectifiers)	Hardware Debugging (Multimeter Oscilloscope Test points)		

Software

Firmware (C/C++ Arduino IDE ESP32-IDF)	Frontend (React Typescript)	Backend (Python NodeJS)
APIs (Google Clerk Auth MongoDB Supabase)	Mobile Dev (Kotlin React Native)	Webservers (AWS Arduino Websockets)
Databases (Postgres SQLite MySQL)	System Design & Simulation (MATLAB Simulink)	

EDUCATION

Bachelors of Applied Science (BASc) in Electrical & Computer Engineering | Minor in Computer Science

University of Windsor

01/2019 - 01/2024 Windsor, Canada

EXPERIENCE

Software Engineer Intern

Research Into Internet Systems (RIIS) LLC

05/2021 - 12/2022 Windsor, Canada

- Built full-stack autonomous drone systems, connecting flight automation, cloud backends, and computer-vision models to count vehicles in parking lots.
- Developed end-to-end drone mapping solutions that captured imagery, processed it in the cloud, and delivered maps and weed-detection results to users.
- Created cloud APIs for large-scale image processing and secure storage of drone flight data using AWS.
- Developed backend services and user interfaces for managing and viewing photos and videos from DJI and Parrot drones.
- Helped build a full-stack vehicle logistics platform, including a manager dashboard and a React Native driver app with real-time tracking, task management, user authentication, and database support.

Automotive Power Electronics & Battery Research Assistant (RA)

CHARGE (Centre for Hybrid Automotive Research and Green Energy) - University of Windsor

01/2024 - 01/2026 Windsor, Canada

- Designed and assembled battery packs and management systems, developing embedded firmware to enforce electrical/thermal safety limits.
- Developed power electronic converters and motor-drive firmware for electric vehicle (EV) propulsion systems.
- Designed PCBs and programmed embedded systems using Texas Instruments controllers, integrating current and voltage sensing hardware.
- Helped establish a university battery research laboratory, from initial planning to equipment selection and installation.

PROJECTS

American Sign Language (ASL) Translation Glove

Designed a wearable embedded system using flex sensors and inertial measurement units, with firmware for real-time sensor acquisition and preprocessing. Built a full-stack pipeline that streams data to a web server running a machine-learning model for gesture classification, and converts recognized ASL gestures into real-time synthesized speech delivered to the user.

DRAM Optimizer for Automotive AI

Developed a full analysis and optimization pipeline to improve AI inference performance by reducing memory bottlenecks. Captured and analyzed real AI workload memory traces, ran cycle-accurate DRAM simulations, and implemented Bayesian optimization to identify memory configurations that balance latency, bandwidth, and power under automotive constraints.

Autonomous Quadcopter Drone

Designed and built a custom quadcopter with embedded flight-control firmware supporting both autonomous and radio-controlled operation. Implemented sensor integration and navigation logic using optical flow for indoor positioning and GPS for outdoor flight, enabling robust operation across different environments.

AWARDS

 Regional Gold Medalist - Windsor Science Technology & Engineering Fair (WRSTEF) 2014-2019	 National Medalist - Canada Wide Science Fair (CWSF) 2015-2016, 2018-2019	 1st Place - Bordercity Hackathon 2017
 2nd Place - BorderHacks 2021	 1st Place programming - Windsor Engineering Competition (WEC) 2019-2023	 Finalist programming - Ontario Engineering Competition (OEC) 2020-2024
 3rd Place - NASA Space Apps (Windsor) 2023	 IEEE Best Demo Award - IEEE PIMRC International Conference 2023	 Innovation Mastery Award - EPICenter Entrepreneurship Excellence Awards 2023
 3rd Place - UWillDiscover Conference Oral Presentation 2024	 2nd Place WinHacks 2024, 2025	 1st Place - NASA Space Apps (Windsor) + Global Nomination 2025
 Finalist - Jaguar Land Rover (JLR) Automotive AI Programming Competition 2025		

VOLUNTEERING

Regional Judge & Student Mentor

Windsor Regional Science, Technology, and Engineering Fair (WRSTEF)

📅 02/2022 - Present

Support event planning, logistics, and public relations for the Windsor Regional Science Fair, serve as a judging team lead, and mentor and advise the top students selected for the nationals.

Moderator & Judge

Geniotech Robotics Genius Cup Competition

📅 06/2025

Act as an impartial referee and judge between student teams as they compete in various robotic challenges

Robotics Mentor

Alhijra Academy

📅 02/2025 - Present

Teach students how to assemble robotics kits, learn C++ and Arduino code, and give them challenges to test their problem-solving skills and creativity