

# Ray Al Haraz

rayalharaz@gmail.com | US Citizen

## Education

**University at Buffalo** – Bachelor of Science in Aerospace Engineering

May 2025

## Experience

**Satellite Operations Engineer**, University at Buffalo Nanosatellite Laboratory – *Amherst, NY*

Aug 2023 – Present

- Developed ground segment testbed integrating OpenC3 COSMOS for the GLADOS mission, enabling real-time uplink/downlink telemetry monitoring during system simulations
- Established test infrastructure linking satellite software to radio ground station for preflight system validation
- Authored NASA-aligned exception handling SOPs for subsystem failure, outlining ground procedures for anomaly response
- Developed fault tree models in Simulink to identify points of failure across electrical and thermal systems
- Defined entry and exit conditions for subsystems using temperature, voltage, and current thresholds to support automated health checks and state transitions
- Coordinated with GNC, Software and Thermal teams to embed FMEA principles into operator training and operational readiness documentation

**Tech Squad (IT) Technician**, University at Buffalo Information Technology – *Amherst, NY*

July 2022 – July 2025

- Led team of 20+ IT consultants to support campus-wide help desk operations, improving student and faculty service coverage
- Reduced repair turnaround time by 35% by upgrading intake and data recovery workflows for personal devices
- Rebuilt OS install and maintenance pipeline for 700+ machines, enabling deployment of a loaner program
- Developed automated scripts for image validation and deployment

**Product Zone Specialist**, Apple Inc. – *Cheektowaga, NY*

July 2021 – Nov 2021

- Delivered tailored tech solutions to customers by leveraging in-depth product knowledge
- Engaged local businesses through Apple's outreach programs to promote enterprise adoption
- Achieved 100% customer satisfaction rating during entire tenure
- Facilitated use of in-store logistics systems to deliver products for transactions during high-traffic hours

## Projects

**High Altitude Autonomous Balloon with Sail** - *SolidWorks, Arduino/C*

- Designed, developed, and tested a reusable high-altitude balloon with a 25 ft<sup>2</sup> sail to improve maneuverability during ascent and descent stages of flight
- Led team of 6 to fabricate payload with actuated control surfaces for lift/drag modulation during ascent and descent
- Enabled autonomous waypoint tracking by programming control algorithms to fuse GPS, magnetometer, and IMU data for real-time aileron actuation
- Designed and fabricated a lightweight, rigid airfoil structure using 3D printed PLA, PVC spars and paracord tensioning for high-altitude stability
- Modeled and integrated sail-payload assembly in SolidWorks to optimize aerodynamic performance and stability

**Car Dashboard Mechatronics Simulator** - *Arduino*

- Designed a dashboard simulation using Arduinos over I<sup>2</sup>C to emulate blinkers, headlights, wipers, AC, and a LCD display
- Programmed IR remote logic to control LED blinkers and headlights via hex-code signal decoding
- Built a temperature-driven AC system using a DHT11 sensor and DC fan with I<sup>2</sup>C-based data routing
- Developed wiper speed control system using buttons and potentiometer to control servo motor speed and position
- Synchronized LCD display with real-time clock and temperature data across Arduinos, demonstrating multi-system feedback

## Skills

**Mechanical Design:** SolidWorks, AutoCAD, GD&T | **Software:** MATLAB, Java, Python, Arduino IDE, Simulink, C++, CUDA, PyTorch | **Technical:** FEA, FMEA, Additive Manufacturing, Systems Analysis | **Languages:** English, Arabic

## Awards

UB SEAS First Year Engineering Design Team Award (2021), NCCC Tech Wars Technical Draft 1st Place (2019)