Arman Islam

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Education

Purdue University, College of Engineering | West Lafayette, IN — December 2028
Intending Bachelor of Science in Electrical Engineering — GPA: 3.93/4.00

Experience

Functional Memory-Enabled Sensing in Additive Manufacturing Research — *West Lafayette, IN*
Undergraduate Research Assistant — *January 2026 - Present*
- Developing interconnection strategies for printed polymer composite samples in series configurations for temperature sensing
- Supporting functional 3D printing research for thermal management applications in chip packaging, integrated electronics, and space
- Successfully fabricated composite laminates with conductive filament using Prusa 3D printer for research with applications in chip packaging, integrated electronics, and aerospace
- Utilized Finite Element Analysis (FEA) for thermal modeling and stress analysis of PLA and TPU samples
- Reviewed 100+ research papers and contributing to state of art the paper on memory enabled sensing materials

Aircraft Structural Health Monitoring Materials Research — *West Lafayette, IN*
Undergraduate Researcher — *January 2026 – Present*
- Designing carbon filament-based sensors embedded within aircraft structures for stress, strain, and structural damage detection
- Developing wiring diagrams and sensor integration strategies for test platform, connecting multiplexers and DAQs sensors for structural health monitoring and data acquisition
- Fabricated 15 CNF-modified PLA composite test specimens (dogbones) to characterize electrical resistivity for sensing applications

Embedded Systems @ Purdue — *West Lafayette, IN*
Firmware Engineer — *August 2025 – Present*
- Developing hardware-in-the-loop test systems codesigned with drone flight controller, demonstrating systems integration capabilities
- Archetyped and implemented RTOS thread/task architecture for microcontroller data input systems
- Created driver software for User Control Read, autonomous hover handler, and LIDAR-Lite v4 sensor integration
- Working with Raspberry Pi (Linux), ESP32 microcontroller, and Zephyr RTOS

Purdue Undergraduate Rocket Propulsion Laboratory — *West Lafayette, IN*
Software Engineer — *August 2025 – January 2026*
- Designed PCB layouts and developed wiring schematics for Maelstrom (500-lbf kerosene-LOX heatsink engine) incorporating low voltage power distribution and protection considerations
- Created and updated Piping and Instrumentation Diagrams program integrating sensor acquisition, valve control logic, and system feedback mechanisms using Python, PyQt5, and Pandas
- Implemented data regression systems for performance analysis and real-time monitoring applications in Python

Arizona State University Cybersecurity Internship — *Tempe, AZ*
Research Intern — *May 2024 – July 2024*
- Conducted comprehensive fuzz and vulnerability testing on Calibre, Jellyfin Media Server, FFMpeg, and MPV media player
- Utilized AFL++, Snapchange, GDB, Rust, and C for low-level system testing and verification
- Presented technical findings in formal poster session to researchers and PhD students
- Gained extensive experience with Linux kernel and system level debugging using gcov and lcov to inspect application behavior and isolate potential exploitability of programs

Technical Projects

Drone Embedded Systems Project | Github Repository (armanislam-07/drone)
STM32F103RB | MPU6050 | Linux | Bare-Metal C
- Implemented bare-metal drivers supporting sensor driver control loops in C (I2C, PWM, GPIO)
- Designed motor driver circuits for brushed DC motors and IMU (similar to MCCs, power transfer/stepping, and breaker-style protection)
- Utilized AutoCAD to create 3D design models for the drone's first model integration.
- Currently developing an auto-leveling control feature by dynamically adjusting PWM signals for drone stability (utilizing PID loops with the MPU 6050 as the gyro)
- Performed DC battery sizing, power distribution analysis, and voltage calculations

Skills

Programming Languages & OS: C++, C, Java, Python, Rust, Swift, Node.js, Linux
Hardware: Bare-Metal Development, Sensor Integration/Calibration, Power systems analysis, PCB Design, Circuit Design
Tools & Design: Altium, AutoCAD, Git, MATLAB, Excel, Finite Element Analysis (FEA), Microsoft Office Suite