

Iftekhar Uddin

Embedded Software Engineer

U.S. Citizen | 252.230.4144 | ifuddin3@gmail.com
linkedin.com/in/uddin-iftekhar | github.com/IftekharUddin

TECHNICAL SKILLS

Languages & Build: C, C++, Rust, Python, Bash, CMake, C++ library packaging

Linux & Embedded OSes: Embedded Linux, Zephyr, bare-metal, Linux kernel, Buildroot, U-Boot, Yocto, BSP, device drivers, bootloaders, secure boot

Hardware Interfaces & Telemetry: ARM, SoC, MCU, FPGA, UART, SPI, I2C, I3C, USB, PCIe, Ethernet, MIPI, GPIO, camera sensors, UDP, telemetry data packing

Debugging & Lab Tools: JTAG, oscilloscope, logic analyzer, protocol decoder, register-level debugging, hardware bring-up, datasheets

Testing & Production: CI/CD, unit testing, integration testing, test infrastructure, manufacturing diagnostics, HVT, EVT, DVT, PVT, verification, validation

PROFESSIONAL EXPERIENCE

Boeing

Aug 2026 - Present

Embedded Software Engineer | Kent, WA

- Refactor mission-critical C++ satellite telemetry software into dedicated UDP transmit and receive components, establishing explicit data flow and separation of responsibilities.
- Implement C++ telemetry-packing logic to convert onboard satellite data into structured payloads for downlink to ground systems.
- Modularize the C++ build with reusable CMake library packages, enabling shared components to support multiple projects.

University of Texas at Arlington

Sep 2024 - Feb 2026

Research Software Engineer | Remote

- Traced and eliminated a race condition in the initialization sequence by enforcing strict ordering guarantees and state validation; improved system reliability from 50% to 100% uptime during startup.
- Engineered a real-time analysis system using KL divergence and mutual information to automatically generate test failure visualizations from mutation testing data, improving test case selection efficiency.
- Architected an end-to-end developer tool (VS Code extension in TypeScript/Node.js) that translates formal method specifications into actionable real-time feedback for safety-critical system design; secured \$100K in grant funding through demonstrable impact.

PROFESSIONAL EXPERIENCE (CONTINUED)

Amazon Web Services (AWS)

Aug 2022 - Mar 2024

Software Engineer | Denver, CO

- Led full-stack development of a resilient monitoring platform ("Critical Canary") enforcing SLA compliance across critical infrastructure for a \$50M+ contract; designed fault detection and recovery mechanisms.
- Coordinated security and infrastructure teams to design and deploy edge telemetry probes, achieving complete network visibility in air-gapped environments while optimizing resource consumption for resource-constrained deployments.
- Prevented system downtime during critical migrations by designing mock interfaces that isolated 12+ service dependencies, reducing integration failures by 80% and enabling parallel testing across teams.

Booz Allen Hamilton

Feb 2021 - Aug 2022

Security Software Engineer | Colorado Springs, CO

- Validated cryptographic hardware implementations against side-channel attacks using spectrum analysis in controlled environments.
- Created a Java-based test environment to safely reproduce and analyze OS-level vulnerabilities in embedded mobile systems.
- Analyzed embedded system firmware using Ghidra and network traffic analysis to identify protocol vulnerabilities and design flaws.

Vigilant Cyber Systems

Summers 2019 & 2020

Embedded Software Engineer Intern | Mt Airy, NC

- Developed low-level Linux kernel drivers in C/C++ enabling direct hardware device control; implemented memory-mapped I/O and interrupt handling for input devices and display subsystems.
- Developed embedded hardware-level exploits for MIL-STD-1553 bus systems using C/C++, interfacing directly with raw electrical signals to reverse-engineer and spoof physical sensor telemetry.
- Bridged low-level embedded operations with high-level applications by architecting a Python wrapper around complex C++ hardware drivers using CFFI, reducing API development time from 3 months to 1 day.
- Built a terminal UI and cross-language platform to safely orchestrate hardware-level kernel commands, delivering a reliable proof-of-concept that secured \$4M in subsequent government funding.

EDUCATION

B.S. Computer Science | University of North Carolina at Chapel Hill

PROJECT

VR Redirected Movement Engine | Project Based on VR Research

- Engineered a low-level, real-time embedded system to manipulate raw hardware tracking data using rotational gain matrices for VR locomotion.
- Optimized the tracking and rendering loop for strict sub-millisecond latency and frame rate requirements, preventing motion sickness by dynamically tricking the vestibular system.