# Zubair Ahmad — Embedded Systems & Qt Software Engineer

**Location:** (Add city, country) • **Email:** (Add email) • **GitHub:** (Add GitHub URL)

## Professional Summary

A pragmatic, results-driven Embedded Systems and Qt Software Engineer with strong experience building robust, production-grade HMI and test-jig applications for defense and industrial customers. Skilled at bridging hardware and software: designing intuitive touch GUIs (Qt Widgets & QML), implementing low-level device communication (UART, RS422, GPIO), and integrating Python toolchains for hardware drivers. Proven record of delivering 13+ client projects, optimizing performance, and building maintainable SDKs, CI-friendly Docker workflows, and complete data-acquisition and reporting pipelines.

## Core Skills

* **Languages:** C/C++ (OOPs, STL, C++11/14), Python, Bash
* **Frameworks / UI:** Qt (Widgets), QML (Qt Quick), QCustomPlot
* **Embedded / Linux:** Raspberry Pi, GPIO, pin configuration, systemd, cross-platform packaging
* **Communication / Protocols:** Serial UART, RS422, Socket programming, TCP/IP, SSH, X11 forwarding
* **Build & DevOps:** Docker, Git, GitHub, CI-friendly packaging, Docker-based testing
* **Data & Reports:** SQLite, QXlsx, automated PDF/Excel generation, structured logging
* **Concurrency & Reliability:** Multithreading, thread-safe hardware access, robust error handling
* **Tools:** Qt Creator, Putty, VcXsrv/XLaunch, ldd/strace/gdb (Linux debug), build systems (qmake/CMake), Inkscape, Inno Setup Compiler, MS Word.

## What I Bring

* End-to-end delivery: from SDD (Software Design Documents) and prototyping to production deployment and post-delivery support.
* Practical system-level knowledge: I optimize for memory, CPU and I/O on constrained embedded hardware.
* Strong stakeholder communication: translate client requirements into usable UI/UX and reliable embedded behavior.
* Maintainability & observability: logging, monitoring, and traceable error reporting so issues in production are diagnosable.

## Notable Projects

**Automatic Cable Harness Tester (ACHT)**  
Client: Bharat Electronics Limited (BEL) | Role: Qt C++ Developer (Kiosk Application Specialist)

* Developed a Qt-based kiosk application for automated testing and validation of defense - grade cable harnesses.
* Implemented continuity, voltage, and resistance measurement modules integrated with BEL’s RS422-based DAU system.
* Designed a secure kiosk mode UI: frameless full-screen, disabled taskbar & shortcuts, and full-screen QMessageBoxes.
* Added admin & user role-based access control with restricted system-level settings.
* Ensured stability and memory-efficient handling for continuous high-volume testing.

**HighG TestJig Application**  
Built a Qt desktop tool for high-G acceleration and ADC data acquisition, processing, and visualization.

* Managed serial communication with embedded hardware, including checksum validation and command-response handling.
* Developed real-time data plotting and monitoring with QCustomPlot.
* Integrated with SQLite, enabling report saving/loading (PDF, Excel) and robust session management.
* Designed a multi-tab, grid-based UI with integrity checks, timers, and system diagnostics.
* Focused on reliability, detailed logging, and user feedback through custom dialogs and error alerts.

**Embedded System Interface Application**

* Created a Qt-based UI for testing and configuring embedded hardware with live serial communication.
* Supported port & baud rate configuration, channel control, and ADC data export to Excel.
* Implemented secure flash operations, event fetching, and detailed backend logging.
* Handled multithreading for real-time updates and responsive performance.
* Used Qt Framework, C++, QSerialPort, QXlsx, ensuring efficient data management and robust error handling.

## Engineering Practices & Deliverables

* **SDD & Documentation:** Prepared clear, testable SDDs and runbooks for QA and field teams.
* **Version Control & Collaboration:** Git workflows, branching strategies, PR reviews on GitHub, release tagging and changelogs.
* **Packaging & Reproducibility:** Dockerized build/test images for consistent deployment across developers and CI.
* **SDK Development:** Designed internal Qt SDK modules to reuse UI controls, plotting widgets, and standardized logging across projects.
* **Testing & Field Support:** Unit & integration test harnesses for serial devices; built tools to reproduce customer issues remotely.

## Achievements

* Delivered 13+ client-focused, production-grade applications in defense and industrial domains.
* Reduced debugging turnaround by building structured logging and reproducible test cases.
* Created reusable Qt SDK components that reduced new-project setup time by weeks.

## Open Source / Repos

* **GitHub:** (Add link) — contains utilities, example drivers, and scripts used for prototyping and tooling.
* Comfortable sharing private work with NDA-safe summaries or sanitized demos for technical interviews.

## Education & Certifications

* (Add Degree(s), Institution(s), Year) — e.g., B.Tech / B.E. in Electrical / Electronics / Computer Science
* (Add any relevant certifications: Embedded Systems, Linux, Qt, etc.)

## Contact & Availability

* **Email:** (Add) • **Phone:** (Add) • **LinkedIn / GitHub:** (Add)
* Available for embedded software roles (Qt/C++), HMI development, and contract work involving test jig automation.

### **In essence**

“Zubair is a full-stack embedded developer — equally fluent in hardware protocols and elegant UI design. A bridge between low-level engineering and user experience, driven by curiosity, discipline, and a relentless focus on reliability.”