ADEEB ALQAHTANI

Senior Software Integration & Embedded Software Engineer
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Summary

Senior Software Integration & Embedded Software Engineer with 12 years of experience. I lead the design and implementation of the **Cougar Helicopter Full Mission Simulator – Middleware System (Defense Project)**, developing custom **low-level C++ middleware**. My work covers embedded systems, interface electronics, and real-time middleware for advanced, mission-critical defense applications. I have worked with systems from **Boeing, CAE, L3Harris, Thales, and Collins Aerospace**, and conducted on-site customer acceptance tests at Saudi military sites. I hold a **B.S. in Computer Engineering** from California State University, San Bernardino, an **A.S. in Instrumentation and Control** from Yanbu Industrial College.

Experience

Rheinmetall Arabia For Simulation and Training — Riyadh

Senior Software Integration & Embedded Software Engineer — 11/2024 - Present

- Developed middleware software using **low-level C++ programming** for real-time data integration, enabling smooth communication between host systems, Image Generator, and external components.
- **Software & hardware integration** of mission-critical devices, managing the full development cycle.
- **Reverse engineered** proprietary systems for development, integration, interoperability across platforms.
- Optimized **real-time data processing** to achieve **sub-millisecond latency** in systems communication.
- **Designed and programmed software testing tools** to validate and verify other software systems.
- **Documented** system architecture for simulator upgrades and produced documentation for a newly developed simulator.

PSAA Engineering Dpt. — Jeddah

Flight Simulator Engineer — 01/2019 - 10/2024

- Led the qualification, testing, commissioning, and certification of Full Flight Simulators, ensuring strict compliance with aviation standards **(FAA, EASA & GACA).**
- **Collaborated with OEMs and international vendors** (CAE, L3Harris, Thales, Collins Aerospace) to implement upgrades and ensure interoperability across simulator platforms.
- **Delivered technical training** for maintenance teams, improving knowledge transfer and long-term operational readiness.
- Integrated **embedded systems software** to enhance simulator simulation performance and functionality.
- Provided expert troubleshooting for complex technical challenges, ensuring timely resolution and minimal downtime.

PSAA Technical Servesis Dept. — Jeddah

Flight Simulator Maintenance Supervisor(D) — 01/2024 - 06/2024

- Led a technician team to enhance operations, and training readiness, ensuring effective coordination and smooth performance.
- Monitored performance and ensured compliance with safety and regulatory standards.
- Prepared detailed technical and performance reports for management, supporting decision-making, audits, and future planning.

PSAA Technical Servesis Dept. — Jeddah

Full Flight Simulator Technician — 11/2008 - 12/2013

- Maintained and optimized flight simulators, ensuring realistic and reliable performance for pilot training.
- Configured single-board computers, modified interface cards, and upgraded I/O units for seamless system integration.
- Installed, calibrated, and aligned instrument panels, visual systems, and motion platforms for enhanced realism.

Education

California State University San Bernardino
01/2015 - 06/2018

B.S. in Computer Engineering

- Focused on **high-performance and embedded systems** with strong emphasis on digital logic, electrical design, and robotics. Included intensive coursework in physics, and math, along with extensive programming in C, C++, Python, and Verilog.

Yanbu Industrial College
08/2004 - 06/2008

Associate Degree of Science in Instrumentation and Control

- Specialized in **electrical fundamentals, sensors, PLC programming, and process control.**

MISK
08/2019 - 01/2020

Deep Learning (AI) Nanodegree

- Hands-on training in neural networks, CNNs, RNNs, and GANs using **Python**, PyTorch, and TensorFlow. Completed projects in data science, image classification, sentiment analysis, and AI-based generative modeling.

Canadian Aviation Electronics (CAE)
05/2009 - 04/2010

Intensive Training Program

- Hands-on training on CAE simulators covering electrical motion systems, interface systems, computer networks.

PROJECTS

Cougar Full Mission Simulator – Middleware System Development (DIS-CIGI)

Developed **DIS-CIGI middleware system** for the Cougar Full Mission Simulator, integrating five critical subsystems using C++. This solution allowed a tactical war computer, originally incompatible with the host computer and IG, to operate smoothly.

National Guard Simulator Operations & Maintenance Project

Managed acceptance testing and performance for **8 simulators (4 Black Hawk, 4 Apache)** at two National Guard sites, working with cross-functional teams to ensure operational readiness and train maintenance staff.

CIGI Based Host Emulator with Flight Control (Tools)

Developed a **real-time host emulato**r that sends CIGI 3.3 packets to an Image Generator, simulating jet movement. It includes a user interface for setting preset values like location, altitude range, and flight freeze, as well as options to choose IP and port.

TRAINING/COURSES

1000+ hours achieved in technical training from Canadian aviation electronics, Thales, L3Harris Technologies and Collins Aerospace (Saudi Arabia, Canada, UK)

Software Engineering in Defence Systems from National Military Industries (GAMI)

SFATE Developer Certificate from TÜBİTAK Defense Industry Research and Development Institute for tactical scenarios and war game software (Türkiye)

Databases and SQL for Data Science with Python

SKILLS

Software: C/C++ · Python · Verilog · Matlab · Simulink · Data Distribution Service · SQL · Qt · Labview

Hardware: Embedded Systems · Electronics · Microcontrollers · Robotics · Field Programmable Gate Arrays (FPGA)