ADEEB ALQAHTANI

Software Integration Engineer & Developer
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Summary

I'm a Software Integration Engineer with 10+ years of experience developing advanced systems for simulation and mission-critical defense applications. I specialize in bridging hardware and software — from embedded systems and interface electronics to real-time middleware.
I led the design and implementation of the **Cougar Helicopter Full Mission Simulator – Middleware System Development**, a custom C++ middleware that integrates Host, Computer-Generated Forces (CGF) and Image Generator (IG).
I hold a **B.S. in Computer Engineering from California State University, San Bernardino (CSUSB)** and a **Deep Learning Nanodegree from MISK Foundation**. My work also includes circuit design, microcontroller programming, and AI-driven aerial combat simulation using reinforcement learning.

Experience

Rheinmetall Arabia For Simulation and Training — Riyadh

Software Integration Engineer — 11/2024 - Present

- Developed API and middleware solutions for real-time data integration, ensuring smooth communication between host systems and external modules.
- Provided technical consultation and advanced troubleshooting support to resolve complex technical issues, optimizing system integration and performance.
- Led integration of simulation and training systems, managing the complete development process from requirements to deployment.
- Designed and documented system architecture for simulator upgrades and new technology adoption.
- Conducted site surveys and provided solutions to improve simulator performance and align with current industry trends.

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).
- Provided expert troubleshooting for complex technical challenges, ensuring timely resolution and minimal downtime.
- Collaborated on system integration and performance optimization to improve simulator reliability and enhance operational efficiency.

PSAA Technical Servesis Dept. — Jeddah

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

- Led a technician team to enhance operations, scheduling, and training readiness, ensuring effective coordination and smooth performance.
- Monitored performance and ensured compliance with safety and regulatory standards, providing reports to support decision-making and improvements.

PSAA Technical Servesis Dept. — Jeddah

Full Flight Simulator Technician — 04/2010 - 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.
- Improved uptime and customized systems to meet specific training requirements through efficient troubleshooting and modifications.

Education

California State University San Bernardino

B.S. in Computer Engineering — 01/2015 - 06/2018

- Focused in high performance and embedded systems.

MISK

Deep Learning (AI) Nanodegree — 08/2019 - 01/2020

- Hands-on experience in 6 artificial intelligence projects.

Canadian Aviation Electronics

Intensive Training Program — 05/2009 - 04/2010

- Simulator Maintenance

Yanbu Industrial College

Associate Degree in Electrical and Electronics — 08/2004 - 06/2008

- Majored in instrumentation and control system.

PROJECTS

Cougar Full Mission Simulator – Middleware System Development

Designed and programmed a middleware system for the Cougar Full Mission Simulator, integrating five critical subsystems using C++, Boost, Open DIS, CIGI Class Library (CCL), and shared memory pipelines. This solution provided reliable real-time synchronization and sub-millisecond latency.

Falcon AI – AI-Guided Gun-Based Drone Interceptor System (Ongoing Research)

Developing reinforcement learning system for aerial defense. Used existing UAVs modified with machine guns. Trained them to detect and shoot down hostile drones over wide areas.

HostJet – CIGI Based Host Emulator with Flight Control (Tools)

Developed a real-time host emulator 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.

LLM-Driven Cybersecurity Compliance Evaluator (AI)

Developed an AI-powered tool with a simple interface to evaluate cybersecurity compliance. It assesses company security measures against National Cybersecurity Authority (NCA) standards and provides real-time compliance ratings.

PROFESSIONAL KEY ACHIEVEMENTS

- **Host Emulator**
  Developed a joystick-driven, real-time C++ host emulator that generates and transmits CIGI 3.3 packets at 60 Hz to simulate jet behavior.
- **Middleware Solutions**
  Developed real-time, multithreaded C++ Middleware solution for Cougar Helicopter flight simulator.

WORK AWARDS

- Recognized as Employee of the Month multiple times for exceptional performance and dedication.
- Appreciation letter for handling a complex 6-DOF electrical motion system failure (2022).
- Appreciation letter for handling a software modification for 6-DOF motion system (2022).

TRAINING/COURSES

1000+ hours achieved in technical training from Canadian aviation electronics, L3Harris and Collins Aerospace

PMP Course

Proposal Writing & Management

Databases and SQL for Data Science with Python

Python for Data Science & AI

Advance Electronics

SKILLS

leadership and management skills: Problem-solving · Interpersonal Skills · Strategic Thinking · Time Management

Hardware: Circuit design · Electronics · Microcontrollers · Robotics · Field Programmable Gate Arrays (FPGA)

Software: C/C++ · Python · LLM · Llama · Mistral · NumPy · Pandas · TensorFlow · PyTorch