Taimoor Hassan

taimoor.hassan94@gmail.com
+92 3363855482
Lahore, Pakistan

Summary

Senior Embedded Software Engineer with over 5 years of experience in software development and team management across diverse geographical locations and time zones. Known for a deep passion for innovating technology products and transforming concepts into functional solutions. Skilled in troubleshooting and debugging both software and hardware, with a methodical approach to problem-solving. Proven expertise in embedded software development, including working with both Embedded C & C++, as well as in leading and managing development teams in embedded software, Android, hardware, and high-level software domains. Strong communicator with a collaborative approach, adept at managing cross-functional teams, and ensuring the successful delivery of high-quality results on time. Highly dedicated to continuous improvement and maintaining a mature, responsible work ethic to contribute to team and project success.

Experience

Senior Embedded Software Engineer

AirCod Technologies • Lahore, Pakistan
05/2019 - Present

Leadership & Team Management:

- Lead and manage a dynamic team of engineers, overseeing task assignments, progress tracking, and ensuring successful software project delivery.
- Spearhead research and development initiatives to integrate emerging technologies that enhance software solutions and improve productivity.
- Conduct regular code reviews, ensure coding best practices, and maintain quality across all codebases.

Software Development & Optimization:

- Designed and developed mobile network optimization tools using NDK, JNI, and Linux Kernel APIs, with a focus on performance benchmarking and diagnostics for major telecom providers (T-Mobile, DISH, NOKIA).
- Developed and optimized network protocol stacks (4G, 5G, VoLTE, RTP, RTCP, SIP, NAS, ASN, RRC), enhancing network performance and reliability.
- Implemented middleware solutions, including Redis-based schedulers, Kafka pipelines, and ZeroMQ message passing, to improve system efficiency, scalability, and real-time data processing.
- Led the development of mobile network diagnostic applications for LTE and 5G technologies, enabling real-time network analysis and troubleshooting.
- Designed real-time data collection tools for GSM, WCDMA, CDMA, LTE, and NR5G networks, providing accurate performance data for major telecom providers.
- Developed TWAMP & OWAMP based client-server model for network bechmarking.

Performance Optimization & System Design:

- Conducted detailed code profiling and performance optimization across Linux, Windows, and Android platforms using profiling tools like Valgrind, Gperftools.
- Designed and implemented encryption and compression algorithms for secure and efficient data storage and transmission across various network protocols.
- Ported and optimized multiple essential Linux libraries (glib, gmodule, libffi) and Wireshark for ARM architecture, ensuring seamless cross-platform compatibility.
- Implemented file streaming mechanisms using Kafka to handle large-scale network logs for real-time data processing and analytics.

Key Projects & Achievements:

- **Mobile Network Optimization Tools:** Developed and deployed Android-based network testing tools using NDK & JNI, enhancing drive testing and cluster analysis capabilities for telecom networks.

- **SIP Protocol Decoding:** Led the development of SIP protocol decoders, significantly improving call event tracking and management, enhancing overall system reliability.
- **Network Throughput Analysis:** Created advanced tools for network throughput analysis based on 3GPP Layer 1, Layer 2, and Layer 3 protocols, improving network bandwidth/throughput analysis capabilities.
- **RRC Automation & NAS Decoding:** Automated RRC compilation and optimized NAS message decoding, reducing manual work and increasing efficiency in testing.
- **Real-Time Data Collection Systems:** Built and deployed real-time data collection systems for telecom networks, optimizing bandwidth and throughput analysis.
- **VoWiFi and Landline Calling Integration:** Successfully integrated VoWiFi and landline calling features into existing company solutions, enhancing overall system functionality.
- **RTP/RTCP Protocol Optimization:** Optimized RTP and RTCP protocols, achieving more accurate Pseudo-MOS, latency, and jitter calculations for enhanced network performance.
- **Wireshark NAS Decoding Enhancement:** Enhanced Wireshark integration for NAS message decoding, significantly improving debugging capabilities for network engineers.
- **Middleware Solutions for Network Systems:** Developed middleware solutions including Redis-based schedulers, Kafka pipelines, PostgreSQL data handling, and ZeroMQ-based distributed architectures to optimize network data handling.
- **Wi-Fi Data Capture & Audio Transmission:** Implemented TinyALSA for real-time audio capture and transmission, enhancing the real-time network analysis experience.
- **Encryption & Compression Algorithms:** Designed encryption and compression algorithms to ensure efficient network data storage and transmission across various platforms.
- **Automated Network Analysis Tools:** Created a suite of automated tools for network performance testing, event logging, and failure analysis, providing reliable and scalable solutions for network troubleshooting.

Remote Work & Collaboration:

- Successfully managed and collaborated with global teams while working remotely for two years during the pandemic.
- Coordinated across cross-functional teams to ensure the successful delivery of software projects, maintaining high levels of communication and collaboration across time zones.
- Contributed to the execution of key projects and initiatives while adapting to the evolving remote work dynamics.

Additional Projects:

- **Network Procedure State Machines:** Designed and implemented network procedure state machines for call flows, connected flows, and handovers, significantly improving network testing automation.
- **Post-Processing Middleware Development:** Developed and optimized post-processing tools, including network log analysis and report generation systems, increasing the efficiency of data analysis.
- **Mobile Network Analysis on Snapdragon Chipsets:** Designed and implemented carrier, band, and cell locking mechanisms for mobile network analysis on Snapdragon chipsets, improving signal analysis accuracy.
- **IoT Room Automation Project:** Led the design and development of a Room Automation (IoT) project, controlling room appliances via a smartphone app using NodeMCU and a PIC 18F452 Microcontroller.

Associate Embedded Software Engineer

School of Robotics • Rahim Yar Khan, Pakistan
10/2018 - 04/2019

Camera Automation Drivers Development (Lua Scripting):

- Developed camera automation drivers using Lua scripting, automating camera functionalities for embedded systems.
- Integrated camera controls and automation features with existing network tools, enabling seamless video capture and processing within mobile network analysis applications.
- Customized Lua scripts to automate camera operations, including real-time streaming, event detection, and motion-triggered actions.
- Enhanced the usability and performance of embedded camera solutions, providing more efficient integration with IoT devices and embedded systems.
- Ensured reliability and error-free operation by conducting extensive testing and debugging of Lua-based automation scripts.

Skills

C, C++, Java, Linux, Software Development, Embedded Systems, Firmware, Debugging, GitLab, Git, Communication Skills, Continuous Improvement, Customer Support, Eclipse IDE, Android Studio, NDK, JNI, 3GPP, NR5G, LTE, UMTS, GSM, ASN1.C, Valgrind, Callgrind, Microcontrollers, PIC, VHDL, PSPice, Wireshark, Proteus, Keil uvision, MATLAB, NODEMCU, QCAT, QXDM

Education

Electrical Computer Engineering

National University of Computer and Emerging Sciences • Lahore, Pakistan
03/2018
Scholarship holder for 4 years of Degree Program funded by ICT Research and Development.

B.Sc (Mathematics, Physics)

Islamia University of Bahawalpur • Rahim Yar Khan, Pakistan
09/2013
Second Top in B.Sc (Mathematics, Physics) from Islamia University Bahawalpur.

F.Sc Pre-Engineering

Govt. Kh. Fareed Post Graduate College • Rahim Yar Khan, Pakistan
09/2012
Topped in Mathematics Test for MEXT Ministry of Japan.

Matriculation

Govt. Comprehensive High School • Rahim Yar Khan, Pakistan
03/2010
Winner at 100 meters race among all schools of RYK.

Languages

English, Urdu, Punjabi