WAHAJ ASLAM

Senior Engineer
Audio Programmer | C/C++, Python | DSP | MPEG AAC Codecs | CI/CD | Embedded

Driven to build innovative tech ventures grounded in academic knowledge and real-world experience

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EXPERIENCE

RESPONSIBILITIES

Senior Engineer
Fraunhofer IIS, Erlangen
Mar 2023 – Present

Scientific Researcher
Fraunhofer IIS, Erlangen
Apr 2018 – Feb 2023

- Design, development, testing & maintenance of advanced audio coding tools and APIs for **xHE–AAC**, **MPEG-H 3D Audio**, and **AAC codecs** based on **MPEG standards**
- Development & Integration of **Digital Signal Processing (DSP)** algorithms for **high-quality** and **real-time audio** processing pipelines
- Research and implementation of **parallel and concurrent processing** workflows for optimized throughput and low-latency performance
- Objective and subjective audio quality evaluation using psychoacoustic models, including MUSHRA, A/B testing
- Development of encoder features for OTT streaming workflows, including Stream Access Points, Adaptive Bitrate Support & DASH
- DSP prototyping and simulation using **MATLAB** and **Python**
- Cross-compilation, complexity/performance analysis, and algorithmic optimization on x86_64 and ARM platforms
- Product integration and validation with external frameworks such as **FFmpeg** and **Windows Media Foundation (MFT)**
- CI/CD automation and pipeline management using **GitLab**
- Supervision of **student research projects** and coordination of academic collaborations

Research Assistant
TU Darmstadt
March 2015 – Nov 2016

- Developed physical layer algorithms and cross-layer prototypes for multi-hop wireless networks using the WARPLAB/WARPDrive framework.
- Implemented receive beamforming techniques for multiple-antenna systems, enhancing signal quality and reliability.
- Created graphical node visualizations to optimize sensor networks, improving overall network efficiency

Embedded Software Engineer
u-blox, Pakistan
Jul 2012 – Aug 2014

- Embedded LTE/4G protocol stack development according to 3GPP release 9, 10, 11
- Utilized Embedded C, Visual Studio, Linux, and Python scripting to streamline development processes
- Customized framework level and upper layer stacks, including NAS, RRC, and PDCP
- Gained hands-on experience with Anite Conformance & Development verification tools, enhancing testing efficiency

SKILLS

C/C++, Python, Bash, MATLAB, Visual Studio, Xcode, CMake, Git, Gitlab, CI/CD, Docker

FFmpeg, Adobe Audition, Sox, JUCE, VST, Pure Data, MFT (Media Foundation Transform), Ableton

Kanban, Scrum, Jira, Confluence

PATENTS

Audio encoder, method for providing an encoded representation of an audio information, computer program and encoded audio representation using immediate playout frames

EDUCATION

Darmstadt, Germany
Sept 2014 – Sept 2017

Master of Science in Information & Communication Engineering (MSc)

Technical University of Darmstadt

Lahore, Pakistan
Sept 2008 – May 2012

Bachelor of Science in Telecommunication Engineering (BSc)

National University of Computer & Emerging Sciences

LANGUAGES

English
Fluent

German
Intermediate (B1)

Urdu
Native

PERSONAL PROJECTS

- Exploring applications of **AI, DSP, and automation** in sports–tech, trade and intelligent system design
- Learning to integrate **signal processing**, **machine learning**, and **multi–agent architectures** for real–world solutions
- Building prototypes with **Python and FastAPI**, focusing on **data analysis**, **workflow automation**, and **user–centric design**

MORE

Passionate about team sports, biking, hiking, and exploring outdoor challenges.
Keen believer in staying active and balanced.
Fascinated by evolving UI/UX design trends.