

# Afkhan Firdose Khan (Firdose Saeik)<sup>1</sup>

Over 12+ years of research and application development in immersive media, mobile applications, and services. Proficient in server-side multimedia streaming and video conferencing. Experienced with various Gstreamer and WebRTC based players implementations for multimedia streaming and video conferencing on the back end. Hands on experience in research, development, evaluation, and optimization of the content distribution, various streaming technologies RTSP, RTP, HLS, WebRTC, Selective Forwarding Unit (SFU), Multi-point Control Unit (MCU) and algorithm development for applications in video streaming, video conferencing, video surveillance, VR/AR, Autonomous Vehicles.

**Mobile:** 9347564646;

**Email:** [afirdosekhan@gmail.com](mailto:afirdosekhan@gmail.com)

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## Education

### Master of Technology (M.Tech)

Information Technology, Networking

VIT University, Vellore, India

2008-2010

CGPA: 8.3

### Bachelor of Technology (B.Tech)

Electronics and Communications Engineering

Jawaharlal Nehru Technological University (JNTU), Hyderabad, India

2004-2008

Percentage: 68%

### XII(Intermediate)

C. N. Raju Jr College,

Intermediate board of Andhra Pradesh, India

2002-2004

Percentage: 78%

### X(High School)

Z.P High School

Chinnamandem, Andhra Pradesh, India

2000-2001

Percentage: 73%

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## Skills

**Programming:** C / C++ / Java

**Application Development:** Multimedia / Android Application / Web Application

<sup>1</sup> The last name changed to Afkhan from Saeik and added middle name khan in Aug 2020

**Multimedia Streaming:** GStreamer / Webrtc / HLS Streaming / SFU / MCU / FFMPEG

**Multimedia Codecs:** Audio / Video / h264 / h265 / vp8 / vp9 / SVC

**Immersive:** VR / AR / Eye-Tracking

**Special Purpose:** Machine Learning / Artificial Intelligence / Video management systems

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## Work Experience

### Company: Vectone Mobile India Pvt Ltd, India

Position: Tech Lead

April 2023 to present.

#### Project: Worktual

Worktual is a comprehensive telecom product that serves as a one-stop solution for teleconferencing and video meeting services with webrtc, gstreamer framework: App to PSTN calling, PSTN to App calling, and audio and video calling for App to App communication using android iOS and web.

#### Key Responsibilities:

- Lead audio, video back end development team with focus on media server SFU / MCU using GStreamer for audio and video conferencing.
- Involved in server side development for scaling and enhancing performance with focus on SFU and MCU with webrtc, gstreamer framework.
- As a backend multimedia developer, optimized audio and video conferencing applications, which handles decoding, encoding, and transcoding of h.264, h.265, VP8, VP9 in AVC/SVC Variants with Gstreamer pipelines.

**Key Skills:** C++, C, GStreamer, Webrtc, SFU, Video Conferencing, MCU, Cloud Infrastructure, Valgrind, GDB.

### Company: CemtrexLABS, CXR, Vicon-Security, India

Position: Senior Software Developer

April 2022 to March 2023.

#### Project: Valerus, Saranyu - Video Management System

Valerus VMS is a sophisticated IP based video management system that streamlines surveillance workflows by seamlessly integrating cameras, encoders, decoders, storage infrastructure, and client workstations. VMS focuses on providing a unified interface for the management of video surveillance infrastructure.

#### Key Responsibilities:

- Engaged in back-end development for IP based multimedia streaming for in-house, and cloud systems using Gstreamer, WebRTC to enhance valerus media player functionality.
- Led the development of proof-of-concept solutions for media players, and implemented back end server SFU and MCU for cloud platform.
- Implemented media trans-coding(encoding and decoding) capabilities to support different device capabilities and encoders, decoders formats of h.264, h.265, VP8, VP9 in AVC/SVC Variants and Optimizing media performance and quality.

**Key Skills:** C, C++, Gstreamer, WebRTC, VMS, Video Streaming, IP Camera streaming, RTSP, SFU, MCU, AWS.

**Company: École de Technologie Supérieure, Canada**

Position: Research and Development Engineer

February 2020 to March 2022.

**Project: Druidnet - Dynamic Resource Utilization for IoT Networks**

DRUID-NET aimed to pioneer a new generation of workload estimators, performance models, and edge computing infrastructure tailored to the dynamic nature of IoT-based applications and evolving networks.

**Key Responsibilities:**

- Conducted extensive research in various resource allocation techniques within cloud systems, aligning architecture, and software interfaces.
- Led the identification of requirements and technology scouting for resource allocation in dynamic networks, proposing an innovative graph-based model.

**Key Skills:** R&D, Design, Architect, Java, CloudSim++, EdgeCloudSim.

**Company: Mobile service Laboratory (MSLab), KTH, SEENXR, Sweden**

Position: Research and Development Engineer

June 2017 to January 2020.

**Project: Driver Sense**

DriverSense technology introduced an innovative interface connecting drivers and passengers in fully or semi-autonomous vehicles with onboard AI. The primary objective was to build trust in self-driving technology and enable disruptive services for future vehicular ecosystems.

**Key Responsibilities**

- Played a pivotal role in defining system specifications, requirements, and technology scouting.
- Collaborated with the development team to create a real-time hardware and software test-bed for assessing performance and evaluating user experience.
- Utilized a variety of tools, including C++, GTA V, Artificial Intelligence, eye-tracking, and Yolo-object detection.

**Key Skills:** C++, Multimedia Streaming, Multimedia Assessment, Object Detection, Artificial Intelligence, Eye-tracking.

**Project: SEEN - Smart Eye-tracking Enabled Networking**

SEEN technology aimed to provide innovative network services using smart eye-tracking sensors to optimize data-intensive applications in future mobile communication systems, with a specific focus on Virtual Reality.

**Key Responsibilities:**

- Develop and optimize peer-to-peer architecture for 360 video streaming services.
- Implemented media processing algorithm for quantifying user experience and bandwidth savings from SEEN perspective within 5G environment.
- Addressed the multimedia streaming challenges with varying network conditions and content provision algorithms to support high-quality zooming, and eye-gaze prediction.
- Enhanced a test-bed for quantifying user experience and potential cost savings from SEEN within a 5G environment.

**Key Skills:** C++, Gstreamer, FFmpeg, Multimedia Streaming, Object Detection, Artificial Intelligence, eye-tracking, HLS/DASH streaming.

**Company: COPELABS, Portugal**

Position: Junior Research and Development Engineer

October 2014 to February 2017.

**Project: Nsense (Nearness Sense)**

Nsense is a people-centric, non-intrusive opportunistic sensing tool designed to seamlessly capture information from short-range wireless technologies (WiFi-direct, Bluetooth) and sensors. It infers a person's state in terms of activity, interaction environment, social proximity, and relative distance.

**Key Responsibilities:**

- Designed the node architecture of novel sensing middleware (NSense).
- Investigate, develop and integrate modules to measure the level of social interaction and propinquity among devices/users, conducting experimentation and analysis.

**Key Skills:** Android application development, Java, Middleware design.

**Company: IBM India Pvt Ltd, India**

Position: System Engineer

May 2011 to September 2014.

**Project: SPP and EFMS**

Service provisioning platforms and End to End flow management systems.

**Key Responsibilities:**

- Involved in the design and development of enterprise applications.
- Utilized Java and related technologies, as well as BPM and process server tools in project development.

**Key Skills:** Java and Java related technologies, BPM, IBM Process server, IBM message broker.

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**Publications**

[https://scholar.google.com/citations?hl=en&user=Jwmp358AAAAJ&view\\_op=list\\_works](https://scholar.google.com/citations?hl=en&user=Jwmp358AAAAJ&view_op=list_works)