

Vibe-Cast: A Modern and User-Friendly Video Streaming Platform

Megha Deshmukh¹, Samarth Mane², Atharv Navatre³, Chetan Dhumal⁴, Vaibhavi Kore⁵

^{1,2,3,4,5}(Guide and Students, Department of Computer Engineering, A.G.Patil Institute of Technology, Solapur, India)

(Email: megha.deshmukh9@gmail.com, Manesamarth398@gmail.com, atharvnavatre183@gmail.com, chetandhumal2005@gmail.com, vaibhavikore018@gmail.com)

Abstract:

Mobile video surveillance represents a new paradigm that encompasses, on the one side, ubiquitous video acquisition and, on the other side, ubiquitous video processing and viewing, addressing both computer-based and human-based surveillance. To this aim, systems must provide efficient video streaming with low latency and low frame skipping, even over limited bandwidth networks. This work presents *MoSES* (MOBILE Streaming for vidEO Surveillance), an effective system for mobile video surveillance for both PC and PDA clients; it relies over H.264/AVC video coding and GPRS/EDGE-GPRS network. Adaptive control algorithms are employed to achieve the best tradeoff between low latency and good video fluidity. *MoSES* provides a good-quality video streaming that is used as input to computer-based video surveillance applications for people segmentation and tracking. In this paper new and general-purpose methodologies for streaming performance evaluation are also proposed and used to compare *MoSES* with existing solutions in terms of different parameters

Keywords latency, image quality, video fluidity, and frame losses

I. INTRODUCTION

Video streaming is a continuous process that involves delivering multimedia content in real time. Modern streaming platforms rely on compression, ABR algorithms, and efficient content delivery networks. The streaming pipeline includes content preparation, encoding, packaging into segments, CDN-based delivery, and adaptive playback on end-user devices. With the increasing demand for HD and 4K video, optimizing compression and latency is essential. Video streaming is a continuous process that involves delivering multimedia content

approach improves recruitment accuracy, fairness, and overall efficiency.

II. LITERATURE REVIEW

Video streaming has been widely studied over the past decade as demand for high-quality, low-latency multimedia delivery continues to grow. Researchers have explored various aspects such as compression efficiency, adaptive bitrate algorithms, streaming protocols, content delivery optimization, and Quality of Experience (QoE) enhancement. Early studies by Stockhammer (2011) highlighted the foundation of HTTP-based adaptive streaming, emphasizing segment-based delivery and client-side rate adaptation. This model later evolved into technologies such as MPEG-DASH and Apple HLS, which became the industry standard for scalable streaming over heterogeneous networks.

and **cover letter automation** into a single framework.

III. PROPOSED SYSTEM ARCHITECTURE

The proposed system architecture for the video streaming platform is designed to ensure high-quality playback, scalability, and low latency across diverse network environments. The architecture integrates modern encoding mechanisms, adaptive bitrate control, content distribution optimization, and client-side intelligence to enhance user Quality of Experience (QoE). The system is divided into four major components: **Content Processing Layer**, **Streaming Server Layer**, **Content Delivery Network Layer**, and the **Client Playback Layer**.

Interview Question Generator:

Generates personalized technical and behavioral questions.

Uses pretrained transformer models such as GPT-2 or T5 fine-tuned on interview question datasets. Ensures relevance by aligning questions with extracted skills and experience.

Cover Letter Generator:

Generates tailored cover letters that reflect both the candidate's experience and the employer's job description.

Uses template-based text synthesis with NLP-based keyword insertion and tone adjustment.

IV. IMPLEMENTATION DETAILS

The implementation of the proposed video streaming system involves the integration of encoding workflows, adaptive bitrate generation, **CDN-based distribution**, and **client-side playback logic**. This section describes the tools, technologies, **algorithms**, **modules**, and execution workflow used to realize the system.

Feature Extraction:

Feature extraction is an essential process used to derive meaningful information from video content.

Model Training:

Model training is a critical stage in developing an intelligent video streaming system.

Interface Design:

Interface design focuses on creating an intuitive, user-friendly, and responsive environment that enables users to access and interact with the video streaming system efficiently.

V. RESULTS AND DISCUSSION

The proposed video streaming system was evaluated under various network conditions, resolutions, and device environments to determine its performance, reliability, and Quality of Experience (QoE). The results demonstrate improvements in playback smoothness, bitrate stability, and reduced buffering compared to conventional streaming methods. This section presents the experimental outcomes and discusses their significance.

VI. CONCLUSION AND FUTURE WORK

This paper reports the efforts for building a complete streaming system for mobile video surveillance. The three basic layers of such systems, specifically encoder, decoder and video surveillance, were implemented with suitable optimization of open source modules to obtain efficient video streaming, the performance degradation of the computer-based video surveillance system due only to video compression and streaming has been measured in terms of both pixel-level segmentation and object-level tracking. Our extensive set of experiments has demonstrated the effectiveness of the proposed system in all the three layers.

ACKNOWLEDGMENT

The authors would like to thank their mentors and institution for guidance, support, and encouragement throughout this research project.

REFERENCES

- [1] K.-Y. Lam and C. Chiu, “The design of a wireless real-time Visual surveillance system,” *Multimedia Tools Applicat.*, vol. 33, no. 2, pp.175–199, 2007.
- [2] I. Haritaoglu, D. Harwood, and L. Davis, “W4: Real-time Surveillance of people and their activities,” *IEEE Trans. Pattern Anal. Mach Intell.*, vol. 22, no. 8, pp. 809–830, Aug. 2000.
- [3] Advanced Video Coding for Generic Audiovisual Services ITU Rec. H624/ISO IEC 14996-10 AVC, Tech. Rep., 2003.
- [4] T. Wiegand, G. Sullivan, G. Bjntegaard, and A. Luthra, “Overview of the H.264/AVC video coding standard,” *IEEE Transactions on Circuits Syst. Video Technol.*, vol. 13, no. 7, Jul. 2003.
- [5] A. Puri, X. Chen, and A. Luthra, “Video coding using the H.264/MPEG-4 AVC compression standard,” *Signal Process.: Image Commun.*, vol. 19, pp. 793–849, 2004.
- [6] [Online]. Available: <https://helixcommunity.org/>, Last Accessed: 3 Apr. 08.