Presentation Title

Your Name

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Content

Introduction

The "Attendance Assistant" presents a forward-thinking solution for revolutionizing conventional attendance tracking in educational settings. Integrating cloud services such as Amazon S3, Amazon EC2, and Amazon DynamoDB with the official Raspberry Pi High-Quality Camera, the project offers a sophisticated hybrid architecture for efficient and scalable face recognition capabilities.

The "Attendance Assistant" represents a significant leap towards modernizing attendance tracking processes. By adopting a hybrid architecture that blends the strengths of cloud services with edge computing, the project offers flexibility and scalability, catering to the evolving demands of attendance management in educational institutions.

Aim

Implement an Automated Attendance Tracking System at our Campus using computer vision, cloud infrastructure, and advanced data science techniques. The goal is to streamline attendance management, reduce manual tracking time, and enhance overall efficiency while ensuring security and tamper resistance.

Objectives

1. Develop an automated attendance tracking system using computer vision for any organization
2. Utilize cloud infrastructure for efficient storage and processing of attendance data.
3. Create a user-friendly application for both teachers and students to simplify attendance management.
4. Implement advanced data science techniques for processing large attendance datasets and performing analytics.
5. Significantly reduce per-class time spent on attendance tracking through automated processes, enhancing overall efficiency.
6. Mitigate the risk of malpractices in attendance tracking by implementing secure and tamper-resistant mechanisms.

Motivation

1. Time taken to take attendance is about 5 minutes in each class. That amounts to around 5 times 6 which is 30 minutes wasted each day per class. For 2 CSF, 2 AI, and 1 CSBS, and 8 CSE Panels, 13 panels for CSE alone waste more than 13 x 30 = 390 Minutes, which is more than 6 hours daily, just marking attendance.

2. This amounts to 6 Hours * 5 * 4 * 10 = 1200 Hours per year just for CSE (50 Days) or 2 months

3. Even after all that time, several more hours are spent on arguments, discussions and manual entry and marking by teachers and students, just for attendance. We do not find this an ideal use of time, and would like to combat this.

4. Malpractices still happen despite of all efforts and time spent. Attendance is mismarked by human error as well. We aim to reduce this error.

Problem Statement

Manual attendance tracking at MITWPU Campus is a time-consuming process prone to inefficiencies and potential malpractices. The current system lacks automation, leading to increased per-class time spent on attendance management. To address these challenges,

there is a need for the development of an Automated Attendance Tracking System. The solution should leverage computer vision for accurate data capture, utilize cloud infrastructure for efficient storage and processing, and incorporate advanced data science techniques for analytics.

The system should be user-friendly, providing both teachers and students with a seamless experience while ensuring security and tamper resistance to mitigate the risk of malpractices in attendance tracking. The goal is to enhance overall efficiency and significantly reduce the manual effort involved in attendance monitoring.

Literature Review

1. Several Research Papers like the ones mentioned below were referred.
2. The gaps between their implementations and our implementations were noted.
3. The gaps in Pricing were also noted. These observations are shown in successive slides.

Existing Market Competitors

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Cost Comparison

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Research Gaps Identified

1. **Lack of Specific Facial Recognition Libraries and Models Documentation** Existing literature fails to provide a comprehensive overview of specific facial recognition libraries and models. The omission of detailed discussions on these crucial components hinders a holistic understanding of the technological landscape.

2. **Absence of Hardware Elements Documentation** A significant gap is identified in the absence of detailed documentation regarding the hardware elements employed. The current body of work overlooks crucial insights into the hardware aspects, limiting the understanding of the complete facial recognition system.

3. **Insufficient Information on Interlinking Hardware and Software** The interplay between hardware and software components is a critical aspect of facial recognition systems. However, the existing literature lacks substantial information on how these elements are intricately interlinked, hindering a comprehensive grasp of the system's architecture.

Research Gaps Identified Contd.

1. **Inadequate Details on Storage and Integration of Information** The literature review reveals a gap in information pertaining to the storage and seamless integration of facial recognition data. Understanding the mechanisms for data storage and integration is essential for evaluating the system's overall efficiency, and this aspect requires further exploration.

2. **Lack of Seamless Integration** The current research landscape highlights a significant gap concerning the seamless integration of services. Notably, existing systems rely on manual user initiation, requiring individuals to independently open dedicated services on their personal devices. This operational hurdle indicates a crucial area for improvement in achieving a more streamlined and user-friendly experience. Addressing this gap is paramount for enhancing the overall efficiency and user adoption of the services, warranting further exploration and innovation in the integration protocols employed.

Hardware Requirements

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Software Requirements

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Activity and Block Diagrams

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Conclusion

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