

AI Based Attendance Development System

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Abstract

AI Based Attendance Development System is presented in this paper. Ensuring staff attendance is crucial for the success of any business or industry. As such, most organizations require a system to track attendance. Cloud computing technology is increasingly being utilized in the human resource management sector to store attendance information, as it offers an excellent option for processing and storing large amounts of data and improving management effectiveness in a feasible manner. This paper explores the use of cloud infrastructures for managing employee attendance, which is categorized into three groups. The study shows that cloud infrastructure has a significant and positive impact on managing employee / staff / student attendance systems. Artificial intelligence is also used to monitor and maintain attendance by capturing motion pictures of students when present to analyze the student data, including the time they entered class. When implemented correctly, these systems improve workplace efficiency, effectiveness, and safety, benefiting both the people involved and society as a whole. The work done & presented in this paper is the result of the mini-project work that has been done by the first sem engineering students of the college and as such there is little novelty in it and the references are being taken from various sources from the internet, the paper is being written by the students to test their writing skills in the starting of their engineering career and also to test the presentation skills during their mini-project presentation. The work done & presented in this paper is the report of the assignment / alternate assessment tool as a part and parcel of the academic assignment of the first year subject on nanotechnology & IoT.

Keywords: AI, Attendance, Monitor, Staff, Students

1. Introduction

Attendance monitoring plays a crucial role in various domains, including education, workplaces, and events. Traditional methods of manual attendance tracking are time-consuming, prone to errors, and lack efficiency. With advancements in Artificial Intelligence (AI) technology, the development of AI-based attendance monitoring systems has gained significant traction. This paper provides a brief introduction to the concept of AI-based attendance monitoring system development, highlighting its significance, functionalities, and potential applications, which is shown in the Fig. 1 [1].

An AI-based attendance monitoring system leverages computer vision and machine learning algorithms to automate the process of attendance tracking. By utilizing cameras or other image capture devices, the system can recognize and identify individuals in real-time, eliminating the need for manual check-ins and reducing administrative burden. This technology has the potential to revolutionize attendance management by offering accurate, efficient, and reliable monitoring solutions [2].

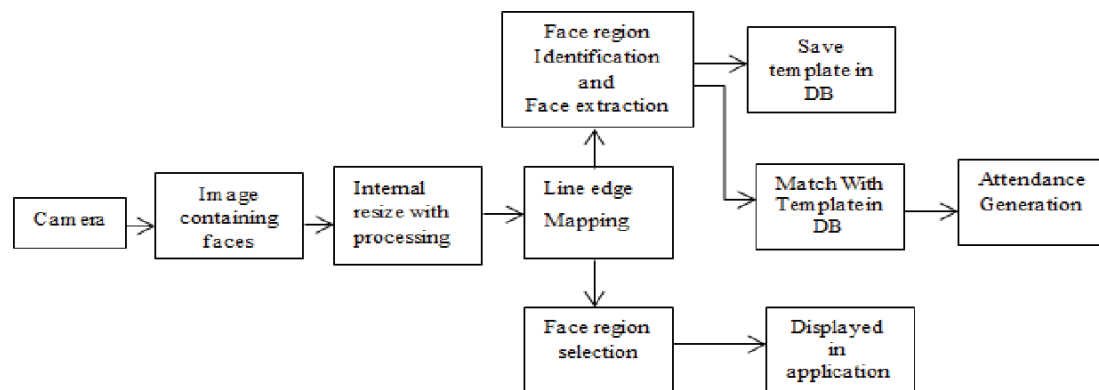


Fig. 1 : Block diagram of the AI based attendance monitoring system

2. Block diagrammatic illustration procedures

To illustrate the components and functionalities of an AI-based attendance monitoring system, we can refer to the following diagram as shown in the Fig. 1 [3].

Image Capture Devices: These devices, such as cameras or video surveillance systems, capture images or videos of individuals in the attendance area. They serve as input sources for the AI algorithms to analyze and identify individuals [4].

Computer Vision and AI Algorithms: The heart of the system lies in the computer vision and AI algorithms that process the captured images or videos. These algorithms employ techniques like facial recognition, object detection, and pattern matching to identify individuals and extract relevant attendance information [5].

3. Systematic Overview

Database and Storage: The system utilizes a database or storage infrastructure to store the attendance data, including the identified individuals, timestamps, and associated metadata. This data can be accessed and utilized for attendance reports, analytics, and record-keeping purposes [6].

Integration and Interfaces: AI-based attendance monitoring systems can integrate with existing attendance management systems or student/information databases, enabling seamless data synchronization and compatibility. Additionally, user interfaces like web portals or mobile applications allow administrators or users to access attendance information, generate reports, and manage the system settings [7].

The benefits of AI-based attendance monitoring systems are numerous. Firstly, they offer enhanced accuracy and reliability compared to manual methods. By leveraging AI algorithms, the systems can accurately identify individuals based on unique facial features or other identifying characteristics, minimizing the possibility of errors or fraudulent attendance records.

4. Benefits & applications

Secondly, these systems provide real-time monitoring and instant data updates. Attendance information is captured and processed in real-time, allowing administrators or authorized personnel to access up-to-date attendance records promptly. This feature is particularly beneficial in scenarios where immediate attendance information is critical, such as emergencies or security monitoring.

Thirdly, AI-based attendance monitoring systems improve efficiency and save time. The automated nature of the system eliminates the need for manual data entry or paper-based attendance sheets, reducing administrative workload and streamlining attendance management processes.

Moreover, these systems can generate comprehensive attendance reports and analytics. By analyzing attendance patterns, trends, and statistics, administrators can gain insights into attendance behavior, identify anomalies, and make data-driven decisions to improve attendance management strategies.

5. Monitoring process

AI-based attendance monitoring systems have wide-ranging applications. In educational institutions, they streamline the attendance-taking process, ensuring accurate student attendance records and enabling proactive interventions for absenteeism. In workplaces, these systems facilitate efficient employee attendance tracking, enhancing payroll management and workforce planning. Additionally, they find applications in events, conferences, and public gatherings, where attendance monitoring is essential for security, crowd management, and resource allocation.

However, it is important to address potential concerns related to privacy and data security when implementing AI-based attendance monitoring systems. Clear guidelines, consent mechanisms, and adherence to data protection regulations are crucial to ensure that personal information is handled appropriately and securely.

6. Conclusive remarks

In conclusion, AI-based attendance monitoring system development represents a significant advancement in attendance management. By harnessing the power of AI and computer vision, these systems offer accurate, efficient, and reliable solutions for attendance tracking. The illustrated diagram highlights the key components of the system, emphasizing its potential applications and benefits. Continued research, technological advancements, and responsible implementation will contribute to the widespread adoption of AI-based attendance monitoring systems, transforming attendance management across various domains.

References

- [1]Pavithra G., Dr. T.C.Manjunath, “Handwritten digital signature recognition using convolution neural networks (CNNs)”, Springer’s International XV Control & Instrumentation System Conf. (CISCON-2018), Dept. of Instrumentation & Control Engg., Manipal Institute of Technology (MIT), Manipal Univ., Manipal Academy of Higher Sciences (MAHE), Manipal – 576104, South Kanara, Karnataka, Paper Id 24, 26-27 Oct. 2018.
- [2]Pavithra G., Dr. T.C.Manjunath, Arunkumar M., “Modelling of discrete events using verilog language”, 6th IFERP’s Int. Conf. on Chip, Circuitry, Current, Coding, Combustion & Composites, I7C-2018, Sri Sairam College of Engg. (SSCE), Conference organized by IFERP & Shirdi Sai College of Engg., Bangalore, Karnataka, India, & associated with Technocrate Group (Technocrate Research & Development Association), Bangalore, Karnataka, India, Day-1, Hall-1, Pre-Lunch (11.30-1 PM), Sr. No. 5, ISBN : 978-81-939399-5-6, Sl. No. 15, pp. 15 (abstract booklet) 28-29 Nov. 2018.
- [3]Pavithra G., Dr. T.C.Manjunath, Rajashekar M. Koyyeda, “Temperature scanning controller design”, 6th IFERP’s Int. Conf. on Chip, Circuitry, Current, Coding, Combustion & Composites, I7C-2018, Sri Sairam College of Engg. (SSCE), Conference organized by IFERP & Shirdi Sai College of Engg., Bangalore, Karnataka, India, & associated with Technocrate Group (Technocrate Research & Development Association), Bangalore, Karnataka, India, Day-2, Hall-3, Pre-Lunch (2.30-4 PM), Sr. No. 6, ISBN : 978-81-939399-5-6, Sl. No. 75, pp. 75 (abstract booklet), 28-29 Nov. 2018.
- [4]Pavithra G., Dr. T.C.Manjunath, “Diagnosis & detection of eye diseases using Deep Convolutional Neural Networks & Raspberry Pi”, IEEE Second International Conference on Green Computing and Internet of Things (ICGCIoT 2018), Sponsored by IEEE Bangalore Section, IEEE Malaysia Section, IEEE Computational Intelligence Society, IEEE Record #44090, IEEE Record No.:#44090 ; IEEE ISBN: 978-1-5386-5657-0 ; IEEE Part Number: CFP18C35-ART, Global Academy of Technology, Bangalore, Karnataka, India, Paper id 297, 16-18 August 2018.
- [5]Kesar T.N., Pavithra G., Dr. T.C. Manjunath, “Development of Methodology for the Analysis of Kannada Movie/Film Reviews using Machine Learning utilizing the concepts of Natural Language Processing”, 3rd International Conference on Research and Modern Innovation In Engineering and



Technology (ICRMIET-19), Christu Jyoti Institute of Technology & Science Jangaon, Telangana, Paper id ICRMIET: 116 ECE, 30 - 31 January, 2019.

[6]Pallavi R. Bhat, Pavithra G., Dr. T.C. Manjunath, “Sentimental analysis, simulation & implementation of regional films using NLPs”, 3rd International Conference on Research and Modern Innovation in Engineering and Technology (ICRMIET-19), Christu Jyoti Institute of Technology & Science Jangaon, Telangana, Paper id ICRMIET: 117 ECE, 30 - 31 January, 2019.

[7]Pavithra G., Dr. T.C. Manjunath, “A review of the annotation based Natural Language Processing System using semi-supervised bootstrapping, ML approaches of Support Vector Machine (SVM) and Random Forest (RF)”, 3rd International Conference on Research and Modern Innovation In Engineering and Technology (ICRMIET-19), Christu Jyoti Institute of Technology & Science Jangaon, Telangana, Paper id ICRMIET: 118 ECE, 30 - 31 January, 2019.