**A STUDENTS ATTENDANCE SYSTEM USING QR CODE BY DEEP LEARNING**

**ABSTRACT**

This paper presents a QR code-based attendance system enhanced with deep learning techniques to ensure accurate and secure attendance tracking for specified users. The system combines QR code scanning with facial recognition to verify the identity of the user scanning the code. When a user scans their unique QR code, the system uses **deep learning models, specifically Convolutional Neural Networks (CNNs),** to match the user's face with pre-registered images. This two-step verification helps prevent unauthorized attendance. The approach aims to increase accuracy, reduce errors, and provide a more reliable attendance system for specific users, making it more secure and user-friendly.

**EXISTING SYSTEM**

Implementing deep learning models, such as Convolutional Neural Networks (CNNs), can be resource-intensive and may require advanced hardware, such as GPUs for training the model. This can increase the initial cost and complexity of the system. Deep learning-based facial recognition can still face challenges with varying lighting conditions, facial expressions, and angles. If the system doesn't perform well in these situations, it could result in false rejections or inaccurate attendance records. Collecting and storing biometric data (like facial images) raises privacy and security concerns. Poor camera quality or poor lighting could affect the performance of the system, leading to errors in attendance tracking.

For facial recognition to work accurately, high-quality images are essential. Poor camera quality or poor lighting could affect the performance of the system, leading to errors in attendance tracking.

**EXISTING SYSTEM DISADVANTAGES**

* Complexity and Cost of Implementation
* **Accuracy of Facial Recognition**
* **Data Privacy Concerns**
* Dependency on Good Image Quality
* Security Risks

**PROPOSED SYSTEM**

The system automatically records attendance when a user scans their QR code. This eliminates the need for manual entry, which can be time-consuming and prone to errors. Attendance can be logged instantly, reducing delays and providing immediate feedback to users and administrators. Since the system relies on digital QR codes, there is no need for paper-based attendance sheets or physical forms, contributing to a more sustainable and eco-friendly solution. QR codes are unique to each user, reducing the risk of unauthorized access or fraud. The QR code can be dynamically generated, making it more secure and harder to spoof.

Deep learning can be further leveraged for facial recognition, ensuring that the person presenting the QR code is indeed the registered user, adding an extra layer of security and reducing the possibility of proxy attendance.

**PROPOSED SYSTEM ADVANTAGES**

* Automation and Efficiency
* Improved Accuracy
* Enhanced Security
* Fraud Prevention
* Environmentally Friendly

**SYSTEM ARCHITECTURE**

**SYSTEM REQUIREMENTS**

Software requirements:

* Operating System: Windows 7(or) above
* Programming Language: Python
* Frontend: HTML, CSS, Java script
* Framework: Web page applications (Django)
* Backend: Sql server.

Hardware Requirements:

* Processor: Intel-i3 core, Ryzen-3

**FUTURE ENHANCEMENT**

This system leverages QR codes, deep learning, and user-specific data to streamline attendance tracking. It incorporates several enhancements for improved accuracy, security, and user experience.

Combine QR code scanning with facial recognition to verify the identity of the user, adding an extra layer of security. Deep learning algorithms can be trained on large datasets to improve facial recognition accuracy, even in challenging conditions like varying lighting or partially obscured faces. Implement liveness detection techniques to prevent spoofing attacks using photos or videos.

**CONCLUSION**

A QR code-based attendance system utilizing deep learning techniques offers a robust and efficient solution for tracking attendance in various settings, including educational institutions, workplaces, and events. By leveraging the power of deep learning algorithms, this system can accurately identify and verify individuals based on their unique QR codes, ensuring reliable and tamper-proof attendance records.

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