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RFID Smart Attendance System Using Face Recognition

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Abstract

conventional attendance monitoring strategies often are afflicted by inefficiencies and inaccuracies. This research proposes and evaluates a hybrid attendance system that integrates facial recognition technology with RFID and GSM modules to decorate accuracy, reliability, and security. The look at explores diverse algorithms, datasets, and gadget designs to optimize performance. Consequences demonstrate the advantages of automation, decreased guide effort, and stepped forward safety in attendance monitoring.

INTRODUCTION

keeping accurate attendance statistics is crucial across various sectors, inclusive of schooling and employment. traditional methods like manual roll calls, RFID structures, and fingerprint scanners present challenges associated with performance, safety breaches, and person inconvenience. Utilising facial recognition technology gives a streamlined, automatic alternative, significantly reducing fraud potential and enhancing the person revel in. traditional attendance systems are frequently plagued via inefficiencies, inaccuracies, and vulnerability to tampering. An extra effective and automatic solution is needed.

The Cause of this research is:

- Increase an attendance machine the use of facial reputation generation.
- Evaluate the accuracy and reliability of the device.
- Check out the environmental factors affecting detection rates.
- Address privacy and statistics protection worries.

LITERATURE REVIEW

II.1 evaluate of current structures: in advance research have added to mild the restrictions of conventional attendance methods, highlighting inefficiencies in manual procedures, the safety risks inherent to RFID-based totally structures, and hygiene concerns connected to fingerprint authentication mechanisms.

II.2 utility of Facial reputation in Attendance monitoring: the advent of facial recognition technology, powered with the aid of superior deep gaining knowledge of fashions, has demonstrated outstanding capacity in automating attendance recording. gear consisting of OpenCV, Dlib, and Face net have been extensively researched and verified for their overall performance.

II.3three Addressing privateness and security in Facial popularity: making sure facts integrity inside facial popularity systems is of maximum importance. This section delves into techniques including encryption, comfy information garage mechanisms, and compliance with statistics safety laws to guard user information.

II.4 diagnosed demanding situations and research targets: despite the fact that a diffusion

of systems is to be had, many lack the implementation of strong security measures and the potential to adapt to diverse environmental situations. This look at seeks to deal with those shortcomings efficiently

METHODOLOGY

Our Hardware Components:

• RFID Reader: This element collects facts from RFID tags the usage of radio frequency alerts. a prime gain is its capacity to feature even without a direct line of sight, making it powerful in overcoming bodily obstacles.

• RFID Tags: every tag is ready with an antenna that handles signal transmission and reception, alongside an included circuit that shops precise identity and different essential information. these tags are attached to individuals to facilitate monitoring via the RFID reader and antenna.

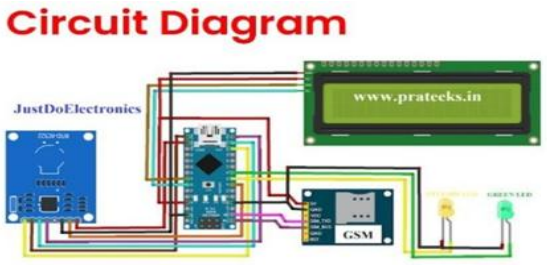
Arduino UNO: performing because the microcontroller, the Arduino UNO is based totally on the eight-bit ATmega328P chip. It carries important factors such as a serial communication interface, a crystal oscillator, a voltage regulator, 14 digital and 6 analog pins, a USB port, a reset button, and 1KB of EEPROM for data garage.

• RC522 Module: This module adds any other layer of protection by using authenticating RFID playing cards or tags assigned to individuals, improving popularity structures like facial identity.

• GSM900 Module: enabling actual-time attendance updates, this module sends SMS notifications to certain contacts (e.g., dad and mom, guardians, or administrators) each time attendance is logged.

Software Requirements: Arduino IDE: This go-platform software (compatible with home windows, macOS, and Linux) is advanced in Java. It allows the advent and importing of code to program the RFID additives.

Interfacing RFID Reader to Arduino: The RFID reader is connected to the Arduino as follows: The ground pin of the RFID reader is connected to the floor pin of the Arduino. The software program Serial Library of Arduino is used, permitting digital pins for serial communique. Pin 9 is used because the Rx of the Arduino



RESULT

The "RFID based attendance system" mission has been finished, and final checking out has been accomplished. the following records became used in testing mode:

Name	ID Number
Dipanshu Bagde	DB019
Om Fukat	OM031
Ayush Choudhary	AC027
Chetan Buradkar	CB025

(LCD image displayed during attendance registration.)

Ayush Choudhary ID: AC027 Attendance Verified

CONCLUSION

This examine demonstrates the feasibility of a smart attendance system the use of facial popularity, RFID, and GSM modules. The findings highlight enhancements in accuracy, automation, and protection. destiny work may additionally explore improvements in deep gaining knowledge of models, actual-time implementation, and in addition privateness safeguards.

FUTURE SCOPE

The evolution of RFID technology aligns with the developing worldwide shift toward contactless answers. imparting a vast advantage over conventional barcode scanners, RFID systems function seamlessly without requiring an instantaneous line of sight. This makes them cost-efficient even as also reducing the chance of errors andmisuse. upgrades, consisting of integrating fingerprint scanners, can in addition raise the machine's competencies. additionally, RFID era can be adapted for numerous packages, including managing library structures and enhancing parking zone safety. In educational settings, incorporating a excessive-definition digital camera can enable facial reputation, taking into account powerful monitoring and recording of student attendance.

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