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International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

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Student Attendance System Using Android Based Mobile Application

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ABSTRACT: Attendance Management System is a software developed for daily student attendance in schools, colleges and institutes. If facilitates to access the attendance information of a particular student in a particular class. The information is sorted by the operators, which will beprovided by the teacher for a particular class. This system will also help in evaluating attendance eligibility criteria of a student

I. INTRODUCTION

The purpose of developing attendance management system is to computerize the tradition way of taking attendance. Another purpose for developing this software is to generate the report automatically at the end of the session or in the between of the session. The scope of the project is the system on which the software is installed, i.e. the project is developed as a desktop application, and it will work for a particular institute. But later on the project can be modified to operate it online. Attendance Management System is software developed for daily student attendance in schools, colleges and institutes. If facilitates to access the attendance information of a particular student in a particular class. The information is sorted by the operators, which will be provided by the teacher for a particular class. This system will also help in evaluating attendance eligibility criteria of a student.

II. LITERATURE SURVEY

B. Prathyusha(2018)Attendance Management System is a software developed for daily student attendance in schools, colleges and institutes. It facilitates to access the attendance information of particular student in particular class. Using rad software development work and development plan to givemore emphasis on approach to put less emphasis on. Red view knowledge as this project progresses achieved in response to the requirements emphasize need to adjust systems analysis and planning phases of systems development life cycle (SDLC) combines elementsof. This program and application development focuses on the same SDLC work. Red, however, users can continue to participate Classroom and still have change or improvement suggestions in the form of actual screen or report are developed. Within the scope of the project to which the software is installed is an ANDROID application, system, and it will work for a particular institution is developed as IE project. School or College's vision with respect to the economic system in being developed. This means that the paperwork is completely eliminated in cost effective. Android is a mobile operating system based on Linux kernel and is currently developed by Google system (OS).

Existing System

In the present system all work is done on paper. The whole session attendance is stored in register and at the and of the session the reports are generated. We are not interested in generating report in the middle of the session or as per the requirement because it takes more time in calculation. At the end of session, the students who don't have 75% attendance get a notice

Proposed System

The proposed system is user friendly because the retrieval and storing of data is fast and data is maintained efficiently. Moreover, the graphical user interface is provided in the proposed system, which provides user to deal with the system very easily.

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Proposed System Advantage

Reports are easily generated: reports can be easily generated in the proposed system so user can generate the report as per the requirement (monthly) or in the middle of the session. User can give the notice to the students so he/she become regular. Very less paper work: The proposed system requires very less paper work. All the data is feted into the computer immediately and reports can be generated through computers.

System Architecture:

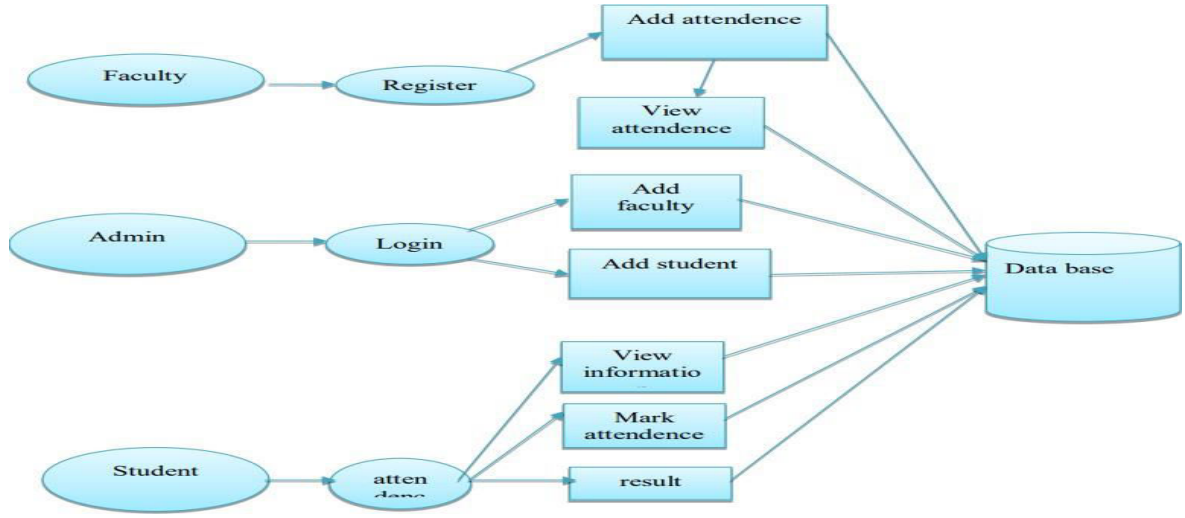

Fig 1.1 System Architecture

In this project We use the Server and Edge server. All the Edge Servers are noted to theserver and the users are registered to the edge server (Fog) . Whenever the user sends the task. The edge server stores the tasks and checks the user activity using RL. If the user finds the suspicious are blocked the task is aborted. If everything is fine the task offloading is done from edge server(Fog) to server

III. METHODOLOGIES

Modules Name:

1. User Interface Design
2. Faculty
3. Admin
4. Server

1. User Interface Design In this module we design the windows for the project. These windows are used for secure login for all users. To connect with server user must give their username and password then only they can able to connect to the server. If the user already exists directly can login into the server else user must register their details such as username, password and Email id, into the server. Server will create the account for the entire user to maintain upload and download rate. Name will be set as user id. Logging in is usually used to enter a specific page.
2. Faculty : This is the first module Data User can register and Login. After login Data facultycan add the attendance or modify the attendance and view the attendance
3. Admin This is the Second module of this project. Admin will add the faculty and studentsaccording to the sessions

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Technique Used Or Algorithm Used

Existing algorithm

Our research presents a system designed to transform the user experience by providing a seamless interface, top-notch security, and lightning-fast connectivity. Using the Model-View-Controller (MVC) architecture, we developed a platform that delivers seamless data handling, clear information delivery to users, and efficient database data flow control. The platform is divided into two sections: one for users and another for guardians.

Proposed Technique:

CNN Algorithm:

Users can selectively share their personal information, including last and live location and daily updates, with specific contacts. In contrast, guardians can access closed personal information, such as live and last location, travel plans, and other updates, and receive notifications of their safe arrival at their destination. Access to the guardian section is granted only to registered and verified users. The platform includes essential components such as a login/registration module, verification module, and order module. Our system sets a new standard of digital excellence and in transforming how people interact with technology.

Steps to Implement the System:

1. **Set up Android Application:**

- **Android Studio:** Use Android Studio for building the app.
- **Permissions:** Request camera permissions and other necessary permissions (e.g., storageaccess).
- **Camera Implementation:** Use Android's Camera2 API to capture real-time images ofstudents.
- **User Interface (UI):**
  - An interface for the teacher or admin to start attendance.
  - A list of registered students and their attendance status.
  - Option to mark attendance manually if face recognition fails.

2. **Integrate Face Recognition Using CNN:**

- **Face Detection & Feature Extraction:**
  - Detect faces from the captured image.

Extract the face features and compare with registered students' faces using a feature matching algorithm like cosine similarity or Euclidean distance.

- **Student Identification:**
  - Train the CNN model using labeled data of students' faces.
  - When the app detects a face, it compares it with the pre-stored feature vectors of registered students and identifies the person.
- **Libraries for Face Recognition on Android:**
  - **TensorFlow Lite:** Use the TensorFlow Lite interpreter to run the CNN model on the Androiddevice.
  - **OpenCV:** OpenCV is a good alternative if you want to build a simpler face recognition model.

3. **Train the CNN Model:**

- **Collect Dataset:** Gather a dataset of student faces with sufficient variation in lighting, angles, etc. Label each image with the student's ID.
- **Preprocessing:** Preprocess the dataset (resize, normalize) before feeding it into the CNNmodel.
- **Model Architecture:** Design the CNN architecture for face recognition. You could use asmaller model like MobileNet to keep it lightweight for mobile devices.
  - **Input Layer:** Input size should match the size of the face images.
  - **Convolutional Layers:** Use several convolutional layers to extract features from the face.
  - **Fully Connected Layer:** Output the class label (student ID).
- **Training:** Train the model using a machine learning framework like TensorFlow or PyTorch.
- **Model Conversion:** Once trained, convert the model to TensorFlow Lite format for efficient inference on Android.

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4. **Attendance System:**
- **Attendance Log:** After face recognition, the student's ID is stored in the attendance log forthat session.
- **Backend Integration:** Send the attendance data to a backend (e.g., Firebase, MySQL) forstorage and processing. You can use Firebase for real-time updates if you want to track attendance dynamically.
- **Display Attendance:** The app should show the attendance record, including the names of students who were marked as present.

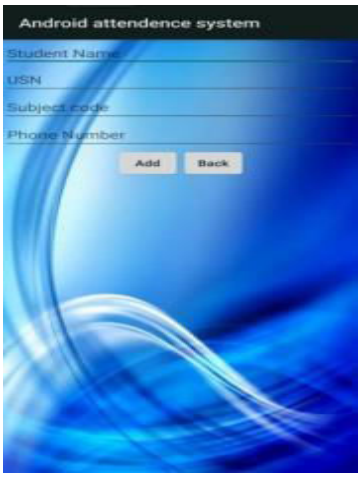
5. **Real-Time Attendance Processing:**
- After detecting the student's face, if it's recognized, the system automatically marks them aspresent.
- The Android app sends the attendance information (student ID, timestamp) to the database.
- If the app can't recognize a student, it can ask the teacher to manually mark attendance.

6. **Backend & Database:**
- Use Firebase or a cloud service to store attendance data in real-time.
- Design a schema with fields like:
  - Student_ID
  - Name
  - Date
  - Timestamp
  - Attendance_Status
- **Firebase Database:** Firebase Realtime Database or Firestore can be used for real-time synchronization of attendance data.

IV. EXPERIMENTAL RESULTS

Registration Page

The Registration page allows users to sign up by entering the required information. Once the registration is successful, an alert is generated to confirm that the user has been added to the system. This ensures that the user is aware of the successful registration and can proceed tolog in.



Login Page :

On the Login page, users enter their username and password to access the system. When the correct credentials are entered, the system successfully logs the user in and generates an alert confirming the successful login. This ensures secure access to the system and informs the user of their successful login attempt.

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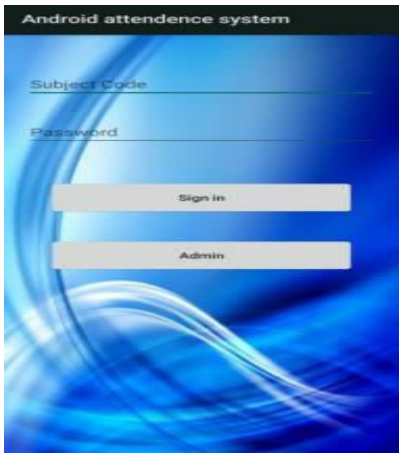
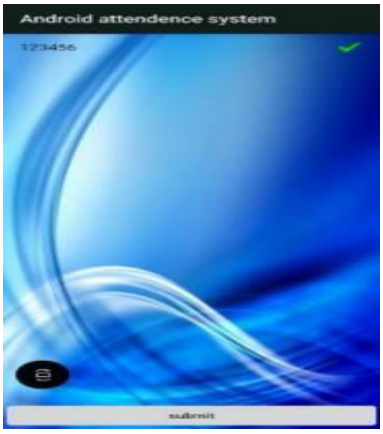


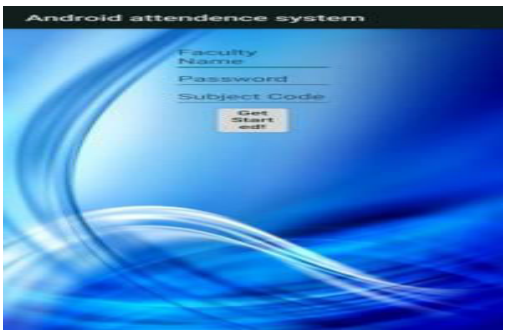
Faculty Page:

The Faculty page allows faculty members to add attendance data for students. After addingthe attendance, an alert is generated to confirm that the attendance was successfully recorded. This page ensures that the attendance data is accurately updated and that the user receives confirmation.



Admin Page:

The Admin page gives administrators the ability to add new faculty and student records or view existing ones. Once an addition or update is made, an alert is generated to notify the relevant data owner. This page ensures proper management of user data and communication with faculty and students about any changes.



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V. CONCLUSION

The Attendance Management System is developed using android fully meets the objectives of the system which it has been developed. The system has reached a steady state where all bugs have been eliminated. The system is operated at a high level of efficiency and all the teachers and user associated with the system understands its advantage. The system solves the problem. It was intended to solve as requirement specification.

VI. FUTURE ENHANCEMENT

The purpose of this research is to design a database system implemented on an academic management android application that will be utilized to support the academic management information system for the advancement of institutions and education systems. The method inthis study is to perform a design consisting of a proposed design to be implemented in applications such as online study materials, notifications, academic calendars and online reminder checks, online attendance records, performance records, and parent intimacy systems using Android applications. The system helps teachers to attend via smartphone and keep student records for their progressive assessments. The system provides prior intimacy tostudents as soon as their attendance is below the attendance threshold specified in the form of SMS. The result of this study is an android-based student attendance management application at an Educational institution

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