

Smart Attendance

Android Application Project

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ABSTRACT

The project is about the very common topic especially for universities. Almost all universities have a strict attendance rules and mostly professors apply these rules during their classes. Sometimes taking attendance can be time wasting and in this project, we are hoping the reduce time wasting. With this project, there will be an automatic attendance system and system will detect students face with camera and system will enroll student as an absence situation. With this situation professor will not waste a time to take the attendance and attendance will be automatically taken by our system.

KEYWORDS

Android, student, attendance, face recognition

1. Introduction

Number of humans that goes to university is increasing day by day. especially with in last 15 years, Number of universities also increased. It means that there are several classes on every university and there are many students taking these classes. When we think about this project, we hoped that our project can be useful all over the world and we have resulted with this project. Almost every university has the attendance rule for their classes. Some classes can be very crowded and taking an attendance can take much time. This situation can steal the time of class and our project aim to fix this situation. With our project attendance of class will be automatically taken by face recognition system. We have created this project for Android devices. On our project students enroll to the system and upload their faces to the system via android device. Then camera works during the class and processed the face recognition system. It detects the students face and compare with the database. If students face is in database, students enrolled to the system as an attend. With this application we are hoping to help professors to save their time from taking attendance and make them comfortable with this automatic system.

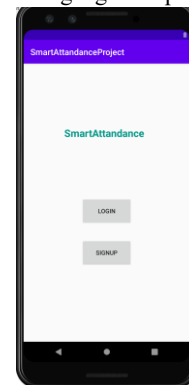
2. Software and Hardware Requirements.

On this project there are several software's and hardware. As a hardware we need android device, laptop and camera. We had an

android device and laptop, but we do not have the camera. For this reason, we are using the laptops camera for face recognition system. As a Software tools we use MySQL, php, python, Android Studio and Microsoft Excel. MySQL is used for databases. Python is used for the face recognition system. PHP My Admin is used for web service and Android Studio (with Java) is used for mobile application.

3. System Design and Implementation

On this project we have used the android studio to create our project. There will be two buttons when we open the application. These are Log in and Sing Up buttons. If user not registered to the system, Sign Up button works. User needs to enter personal info for system and system adds this information the system including picture of student. Database that we use to store the data is MySQL. All information belonging the system is stored on MySQL database. When system gets the information from the user, student will be eligible to be recognized during the class and marks to the attendance list. We also hold the attendance lists on MySQL database. To make the communication between program and Database, we use PHP My Admin Web Service. We have used methods of web services to send the data and get the data from database system. When user is already member of system, needs to click log in button. If information is true for log in user goes to the next page to see personal information. For face recognition system we have used the python language compiled on PyCharm.



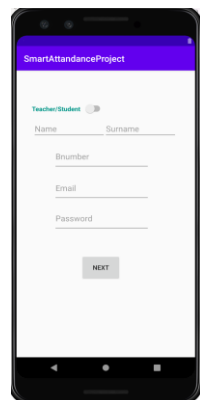
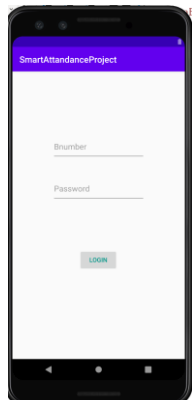
3.1 MySQL Database

We have used MySQL database for our project to store information. We have linked the database with System using the Php My Admin Web Service. There are 3 tables on the MySQL database. They are student, attendance List, Teacher. Student table holds the information of students. Attendance List holds the information of attendance for students according to their school id and time of class. Teacher table holds the information of teachers. For student table first students needs to give information after clicking sign up button on the main page of program. Teacher table have been created for future works. We have planned to improve this project in the future, and we created teacher table for future updates. We are not using this table for now. Attendance List table is used for holding attendance information for students. When face recognition detects the face of student, it sends the attendance info to system. I will explain how send information to database on Face recognition explanation.

Table	Action	Rows	Type	Collation	Size	Overhead
attendancelists	Browse Structure Search Insert Empty Drop	12	InnoDB	latin1_swedish_ci	16.0 K	13
classes	Browse Structure Search Insert Empty Drop	0	InnoDB	latin1_swedish_ci	16.0 K	13
students	Browse Structure Search Insert Empty Drop	5	InnoDB	latin1_swedish_ci	16.0 K	13
teachers	Browse Structure Search Insert Empty Drop	1	InnoDB	latin1_swedish_ci	16.0 K	13
4 tables	Sum	18	InnoDB	utf8mb4_general_ci	64.0 K	13

3.2 Android Studio

We have used Android Studio Oreo on this project. We have created 6 different pages using Android Studio. There were 2 languages that can be used for android project and we have used the Java language on our project. We made our all connection with web service using Java language inside the Android studio. We have created pages as an activity on Android Studio. When we open the program first welcome center welcome us and there are 2 buttons signup and login. Signup is used for giving personal information and log in is used for entering system. If user enters the wrong information on log in page, user can not go inside the system. Every activity is related to each other with in specific way. For example, user that clicks log in button cannot go the upload photo activity. Or if user clicks the sign-up button, user will not be able to reach the personal information page that is related to the log in button. You can see the pictures of android application for different pages. And also, you can see the codes of android application for activities and buttons.



3.3 Face Recognition

Face recognition system is very important for our project. We have used the open cv for face recognition system. Face recognition system is worked on python language. It is compiled on PyCharm. System detects the faces with area of camera and compare the face with faces of students on database. If it is already in the database system sends attendance information to the excel sheet that is created on laptop. System keeps working until it is shutting down and it compares every face that appears on camera. When all attendance information kept on excel sheet, information is sent to the Attendance List table from excel and excel delete itself. You can see the code of face recognition system in the picture.

```
while True:
    ret, im =cam.read()
    gray=cv2.cvtColor(im,cv2.COLOR_BGR2GRAY)
    faces=faceCascade.detectMultiScale(gray, scaleFactor=1.2,
    minNeighbors=5, minSize=(100, 100),
    flags=cv2.CASCADE_SCALE_IMAGE)
    for(x,y,w,h) in faces:
        founded_id, conf = recognizer.predict(gray[y:y + h,
        x:x + w])
        cv2.rectangle(im,(x,y),(x+w,y+h),(225,0,0),2)
        if (conf < 75):
            if (founded_id):
                ts = time.time()
                date =
                datetime.datetime.fromtimestamp(ts).strftime('%Y-%m-%d')
                timeStamp =
                datetime.datetime.fromtimestamp(ts).strftime('%H:%M:%S')
                aa = df.loc[df['id'] ==
                founded_id]['firstname'].values
                tt = str(founded_id) + "-" + aa
                attendance.loc[len(attendance)] = [founded_id,
                aa, date, timeStamp]
                founded_id = aa
```

Id	Name	Date	Time
2	['Gizemnur']	5/3/2020	15:37:10

4. Evaluation

Our project focuses to prevent time wasting on taking the attendance during classes. Our project can be used on universities and colleges. It is not that advanced enough, but it can be improved with in time to use it fully on classes. I hope that it can be used commonly on different universities all over world.

5. Conclusion

As a conclusion, we have created the android project that based on Android application. It is smart attendance project and it can be used on classes to prevent the waste of time for taking the attendance.

At the end of project, we have reached our purpose. With the invention of project, we hope that taking an attendance will be

easier for classes and time spent for taking attendance can be used more effectively.

6. Acknowledgments

Before “Internet of Things” class we have never created an application like this. This project gave us a chance to work on different areas such as web service, android studio. Thanks for this class that taught us during this semester.

7. References

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[2] <https://www.udemy.com/topic/android-development/>

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