

SMART ATTENDANCE SYSTEM USING OPENCV

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Abstract: In latest tutorial system, to Maintain the student's attendance file with daily things to do is a difficult work for faculty. The identify of pupil referred to as via school this takes time taking and misplacement of attendance which leads to proxy attendance. Marking attendance manually isn't solely time eating however additionally it leads to unsecure, unreliable and may additionally be guide attendance misplaced due a number motives like dropping data and so on. To beautify Manual attendance gadget with the aid of the use of clever attendance device performs full-size function to reap guide device disadvantages. In Now-a-days clever attendance machine performs essential position for taking attendance for keep student's attendance archives in a college database which similarly used in evaluation performance. The each day attendance of college students is recorded duration wise which is saved already by means of the college administrator crew and also school having a reproduction attendance records. The above state of affairs will takes place at the time corresponding subject's school arrives and logged into their device and routinely begins taking snaps the use of their diagnosed database to publish correct and right attendance will submit in the college portal. The detecting gadget is developed through the integration of ubiquitous elements to make transportable system for taking snaps of students. It will be managing and monitoring the college students attendance archives the usage of the technological know-how like Face Recognition which is designed in a structure of software program for a hardware system.

1.INTRODUCTION

Automation of Attendance System has an gain over traditional strategies in that it saves time and can additionally be used for monitoring. This additionally aids in the prevention of false participation. Other biometric techniques, such as these noted below, can additionally be used to computerise the attendance process:

1. Log Book entry.
2. Fingerprint based totally System.
3. IRIS Recognition.
4. RFID based totally System.
5. Face Recognition.

Face Recognition is a famous photograph processing technological know-how due to the fact of its full-size usage. Face consciousness might also be used to discover human beings in an agency for attendance purposes. The upkeep and comparison of attendance information is quintessential in each and every organization's overall performance review. The intention of developing an attendance monitoring gadget is to automate the traditional technique of taking attendance. With much less human interaction, the Automated Attendance Management System conducts the daily duties of attendance marking and review. When the depth is greater, the typical structure of attendance marking will become very time ingesting and complicated.

Facial cognizance is the most unique, efficient, precise, and economical of all the methods described above.

Automation of Attendance System has an advantage over conventional methods in that it saves time and can also be used for monitoring. This also aids in the prevention of false participation. Other biometric techniques, such as those mentioned below, can also be used to computerise the attendance process:

1. Log Book entry.
2. Fingerprint based System.
3. IRIS Recognition.
4. RFID based System.
5. Face Recognition.

Face Recognition is a popular image processing technology because of its widespread usage. Face recognition may be used to identify people in an organisation for attendance purposes. The maintenance and evaluation of attendance records is critical in every organization's performance review. The aim of creating an attendance monitoring system is to automate the conventional method of taking attendance. With less human interaction, the Automated Attendance Management System conducts the everyday tasks of attendance marking and review. When the intensity is greater, the traditional form of attendance marking becomes very time consuming and complicated.

Facial recognition is the most unique, efficient, precise, and cost-effective of all the techniques described above.

Open CV (Open Source Computer Vision Library) is an open source software program library for the reason of desktop learning. Open CV was once developed to serve the cause of laptop imaginative and prescient functions and to stimulate the utilization of desktop understanding in the commercially

plausible products. Open CV is a BSD-licensed product which is handy for the utilization and change of the code. The library incorporates greater than 2500 superior algorithms which includes a great set of each traditional and modern-day laptop imaginative and prescient and computer studying algorithms. These algorithms can be employed for the detection and focus of faces, identification of objects, extraction of three D fashions of objects, manufacturing of 3D factor clouds from stereo cameras, stitching pix collectively for manufacturing of a excessive decision picture of an complete scene, discovering comparable pix from an photo database, doing away with purple eyes from snap shots taken the use of flash, following ye movements, cognizance of surroundings and setting up markers to overlay it with intensified actuality etc. It consists of C++, Python, Java and MATLAB interfaces and helps Windows, Linux, Android and Mac OS. Open CV ordinarily entails real-time imaginative and prescient purposes taking benefit of MMX and SSE directions when available. A full-featured CUDA and Open CL interfaces are being gradually developed. There are over five hundred algorithms and about 10 instances features that shape or returned these algorithms. Open CV is written inherently in C++ and has a template interface that works harmoniously with STL containers.

2.LITERATURE SURVEY

This section reviews the research works carried out by different researchers that are related to the proposed work. In general, the mobile application is developed using any one of the languages such as Java using software development kit (SDK). The data used for the application or processed by the application are stored in the data bases. The following mobile application developers succeed in developing the student attendance management system with the structured query language (SQL) data base

V. Somasundaram et al presented a mobile-based attendance system using visual basic .Net (VB.NET) and SQL server. This system is used to store, organize, find and manage the information of the students and helps to generate the reports of the student information [1].

K. Akhila et al proposed an android-based mobile application for student attendance tracking system. It offers reliability, time saving, and it is easy to control and to take the attendance using android mobile phones. It can reduce the efforts of the staff members towards attendance maintenance. It is an efficient and user friendly android mobile application for attendance monitoring [3]. Rakhi Joshi et al developed an android-based attendance management with smart learning system. The web-based mobile application is developed with a SQL server. This system is used to mark attendance through smart phone and gives a prior intimation to student as soon as their attendance goes below the specified level through SMS [2]. Moreover, Amita Dhale et al. presented a survey on “smart connect”, android and web based application for college management system. It is developed using SQL server. It is mainly used to store the details required for the institutions [8].

The mobile operating system (MOS) place a key role in the development of mobile application since the application for one MOS is not compatible with other MOS. Therefore, before developing the mobile application for a particular application the MOS must be considered and the application must be developed for the same. Thus, the student attendance management and monitoring systems are developed for the Android MOS. Akshay A. Kumbhar et al presented an automated attendance monitoring system using android platform. It is then used to maintain the attendance of the student regularly [9]. Jessenth Ebenezer et al

presented an android-based student activity register system. It is used to mark the attendance and to store the details of the students so that the professors or higher officials can view the attendance of the students and regulate them if they are not regular to the classes [7].

The mobile application-based attendance management system is also employed in the organisations to mark the attendance of the employees. S.P. Avinaash Ram and J. Albert Mayan presented a mobile application for employee registration and mobile attendance. It is used to update the employee attendance regularly and track their attendance. Moreover, it is helpful to the staff and the authorities to take the attendance. This system is also used to know the number of employees easily and to monitor whether they are regular to the organisation. This system also provides the details of every employee [4].

3.PROPOSED SYSTEM

Face is the crucial part of the human body that uniquely identifies a person. Using the face characteristics as biometric, the face recognition system can be implemented. The most demanding task in any organization is attendance marking. In traditional attendance system, the students are called out by the teachers and their presence or absence is marked accordingly. However, these traditional techniques are time consuming and tedious. In this project, the Open CV based face recognition approach has been proposed. This model integrates a camera that captures an input image, an algorithm for detecting face from an input image, encoding and identifying the face, marking the attendance in a spreadsheet .The training database is created by training the system with the faces of the authorized students.

3.2 IMPLEMENTATION

There are total 4 major elements: The actors that the system you are describing

interacts with, the system itself, the use cases, or services, that the system knows how to perform, and the lines that represent relationships between these elements.

- First **admin** has only the access to **login to the admin page** who can add the faculty or to add the source code, packages etc. Admin page is created to avoid the restriction to others, so others like third party members cannot proxy the data and they cannot login to the admin page.

- **Login to the dashboard** it is the which is appeared when admin login to the admin page. Dashboard can be accessed by the faculty and by the admin in dashboard we are having the columns like to add the student have no access to the dashboard if the student have no access

to the dashboard if the student want know the attendance then they need to consult the faculty for the access to check the attendance.

- **Manage and monitoring** it is the one which can be accessed by the faculty and by the students .in the dashboard the total activity which are taking the attendance or to add the student details are monitored by the faculty and also by the admin.

- **View student attendance and modification** the attendance which is given by the faculty to the student is viewed and modified by the faculty only. If students want to modify the attendance then they should consult the teacher because they can not modify their attendance.

In our research/project we are using Django Web Frame work for web development process.

Django:

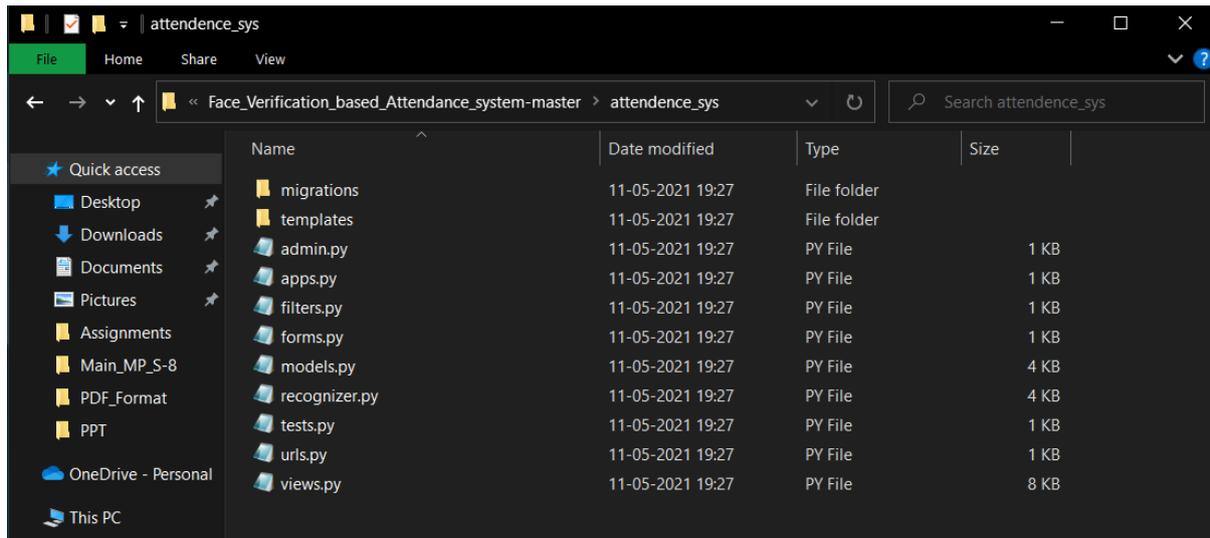
Django is a Python web framework. And like most modern framework, Django supports the MVC pattern. First let's see what is the Model-View-Controller (MVC) pattern, and then we will look at Django's specificity for the Model-View-Template (MVT) pattern.

To install the library, you can type a simple line of code in your command shell:

pip install Django

DJANGO MVT Pattern:

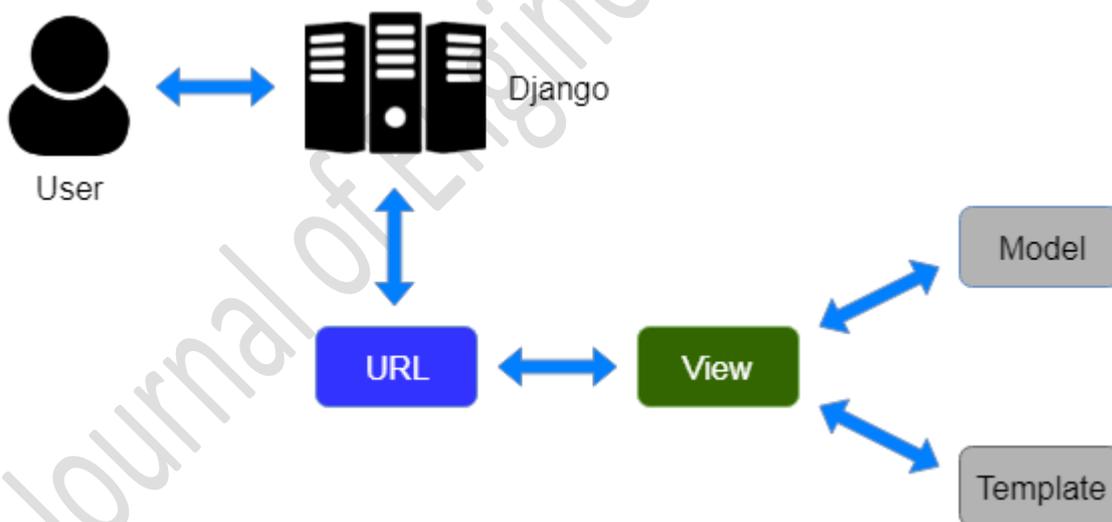
The Model-View-Template (MVT) is slightly different from MVC. In fact the main difference between the two patterns is that Django itself takes care of the Controller part (Software Code that controls the interactions between the Model and View), leaving us with the template. The template is a HTML file mixed with Django Template Language (DTL).



Here, a user requests for a resource to the Django, Django works as a controller and check to the available resource in URL.

If URL maps, a view is called that interact with model and template, it renders a template.

Django responds back to the user and sends a template as a response.



- In our project Model refers to models.py which is access for the data model to generate auto queries based on the users click on the interface.
- In our project Template refers to Templates folder as shown in above image which consists different templates for multiple forms/pages.
- In our project View refers to views.py which can perform request and response between Django Framework, Model, and view.
- Static folder consists of image classification of students and faculty, logo.

- Manage.py for "Django's command-line utility for administrative tasks."
- SQLite is a C library that provides a lightweight disk-based database that doesn't require a separate server process and allows accessing the database using a nonstandard variant of the SQL query language. Some applications can use SQLite for internal data storage.
- sqlite3'. The file is database file where all the data that you will be generating will be stored. It is a local file as Django is a server-side framework and it treats your computer as the host when you actually run the server in command line/terminal.

4.RESULTS AND DISCUSSION

Fig 1: Then Enter the Valid credentials of faculty to access the Attendance portal as shown in below image.

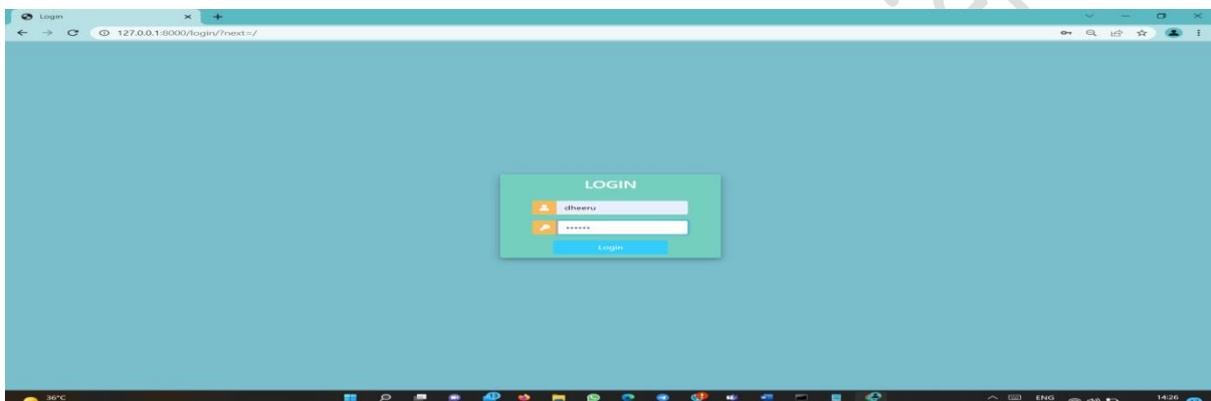


Fig 2: Faculty can add the students based on the list comes from administration as shown in image.

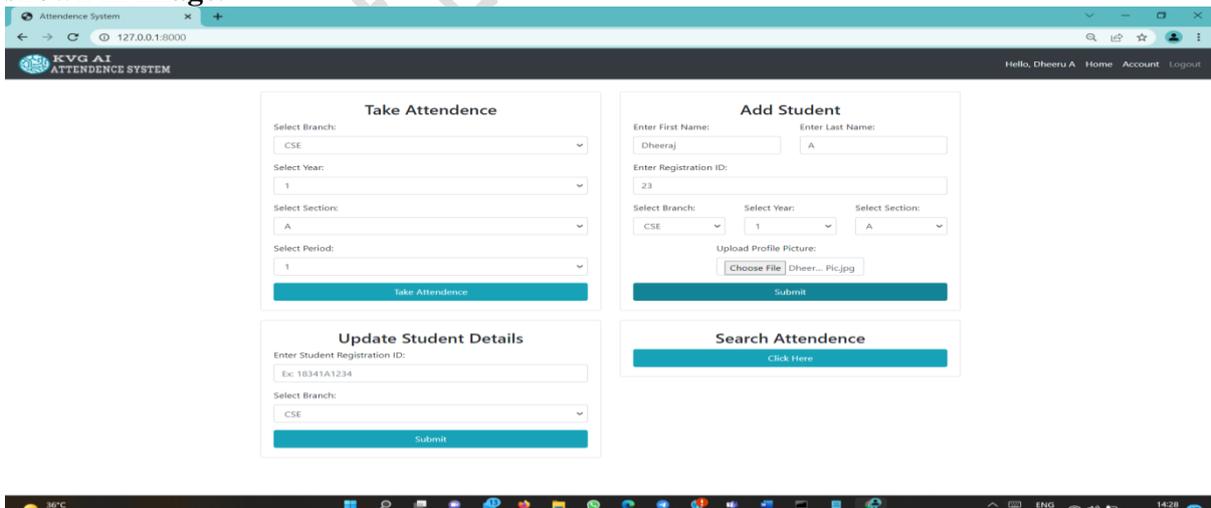


Fig 3: When faculty authentication have done and enter the branch, year, section and period. Then student comes infront of device to take attendance as shown in below image.

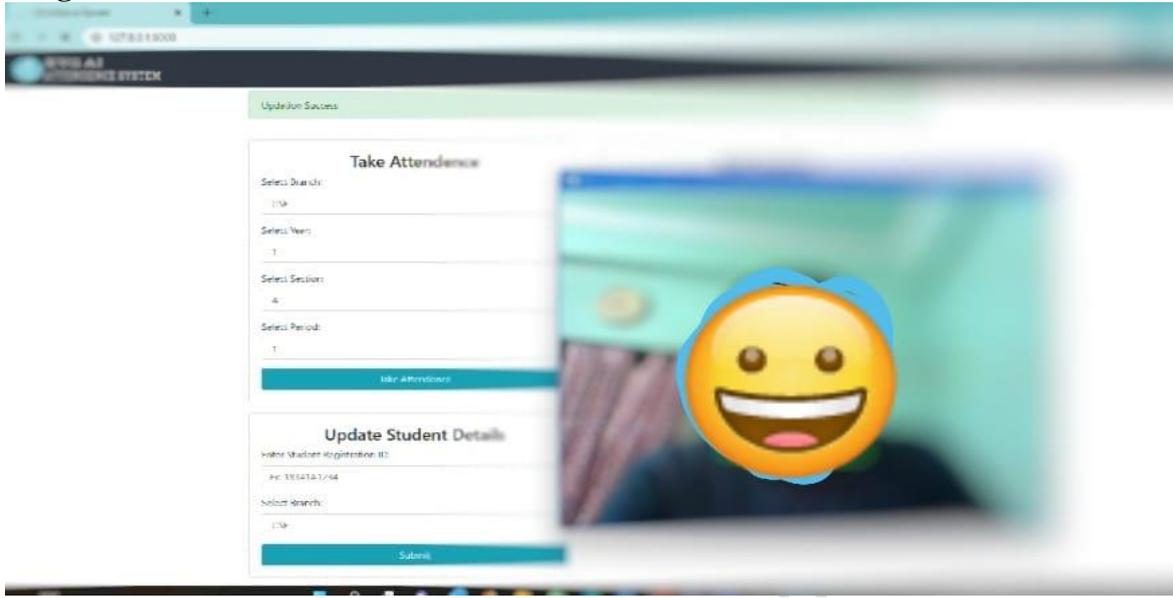


Fig 4: After completion of student attendance. Faculty will stop the device module access and attendance will be display then take a snapshot of it. And post it in official university portal.

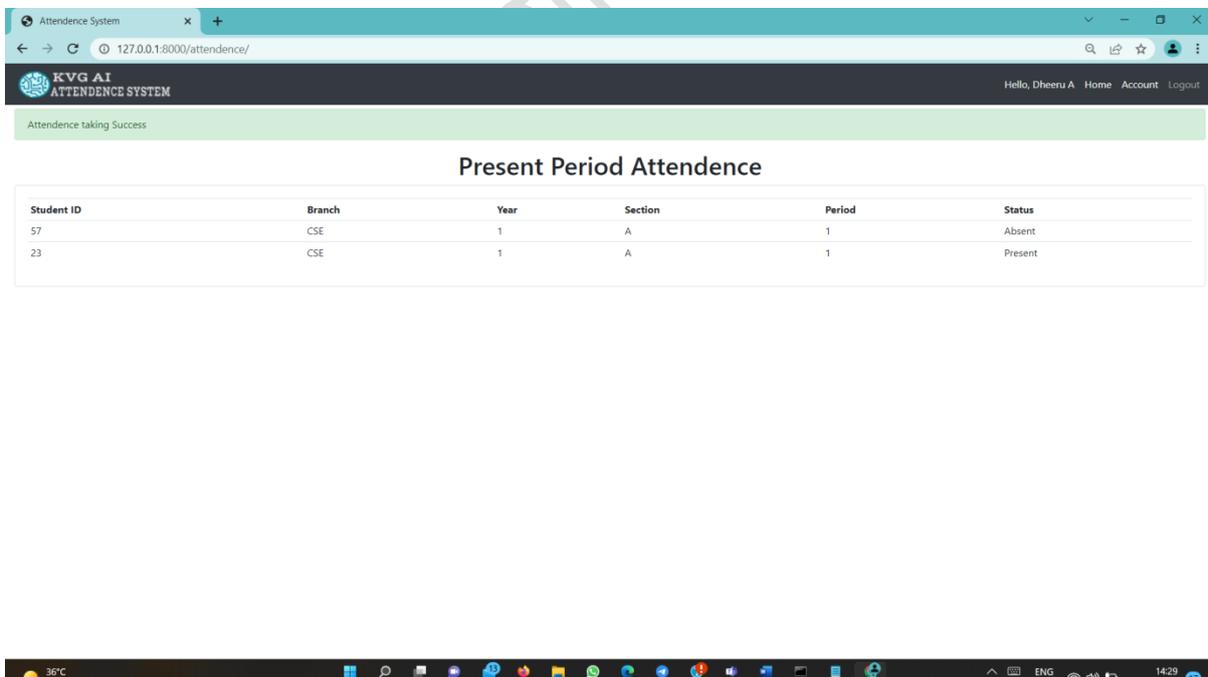
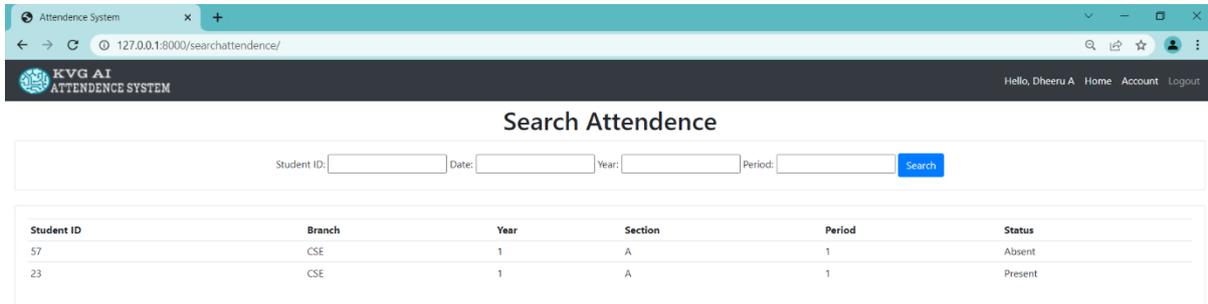
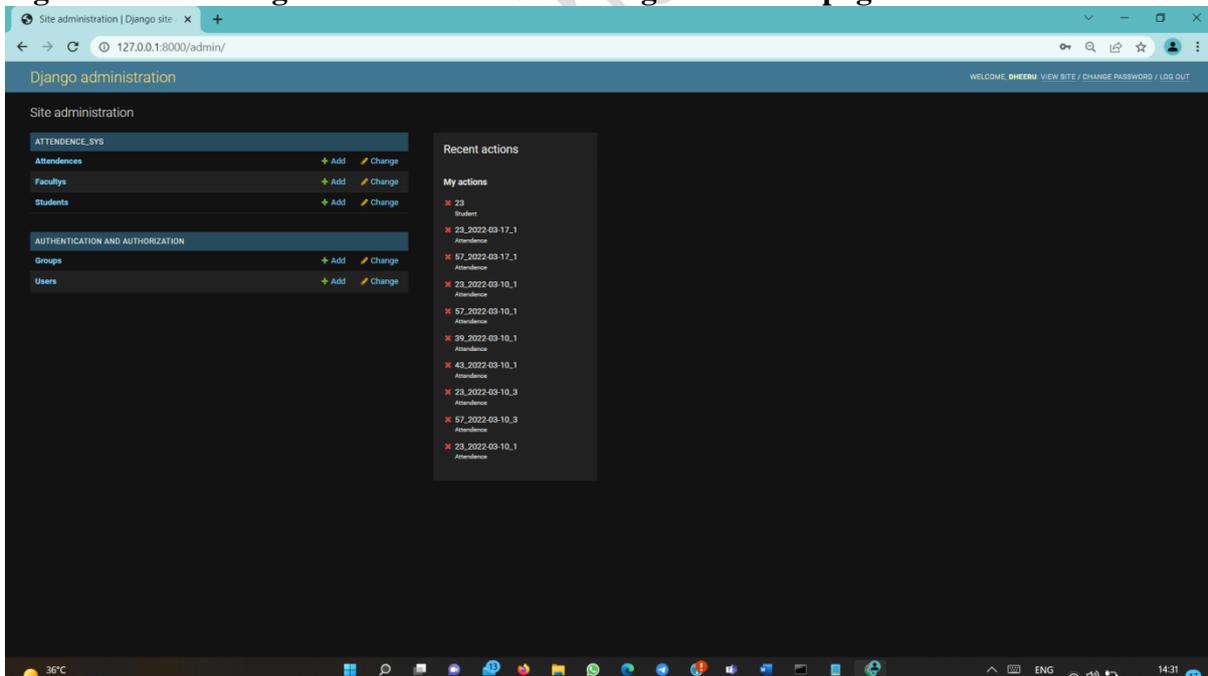


Fig 5: For searching attendance of student we can click on the Search attendance option it will redirect to the search attendance form page then enter the particular student details to verify as shown in below images.



Administration Access:

Fig 6: After entering valid credentials it will log into admin page.



Here admin have access modify the attendance to change.

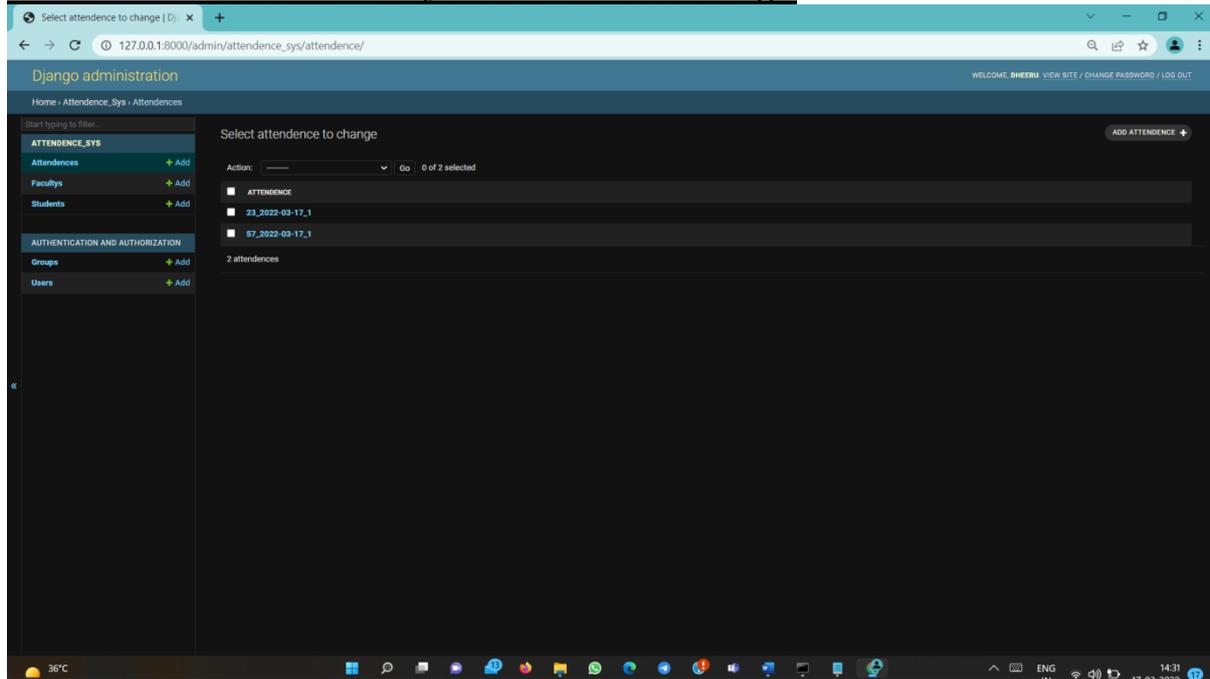


Fig 7: Here Admin can add the sub-user to maintain server and privileges Of faculty and students.

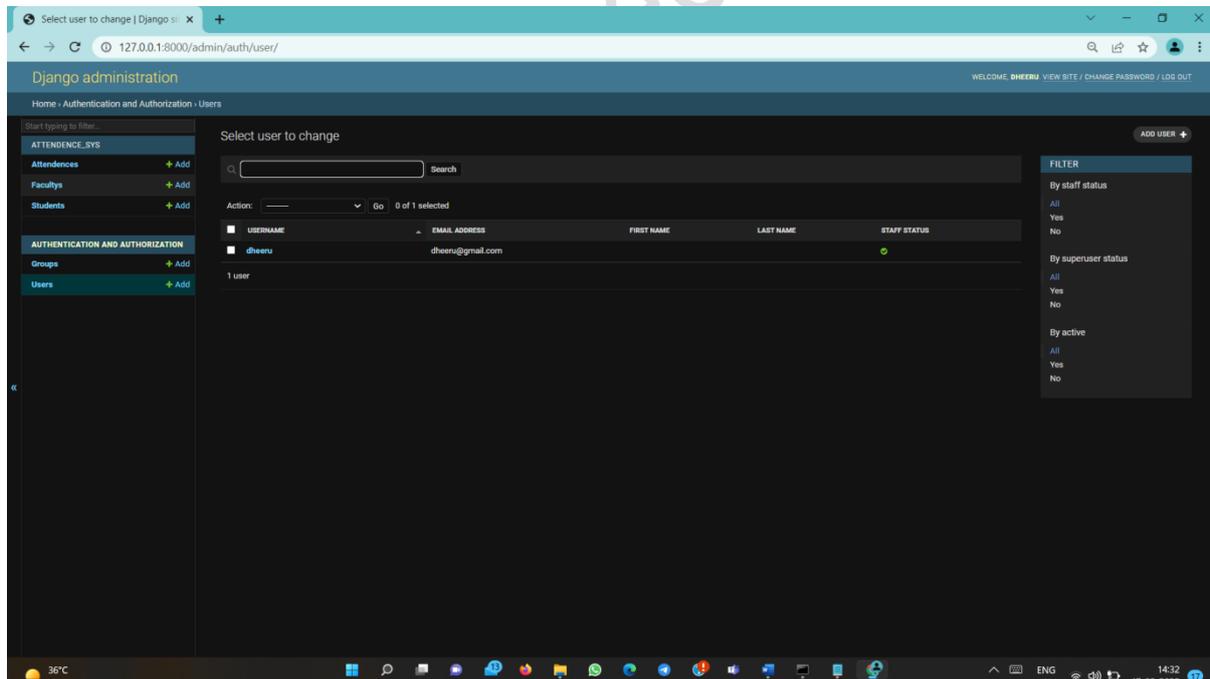


Fig 8: Admin can manage the server up and down maintenance.

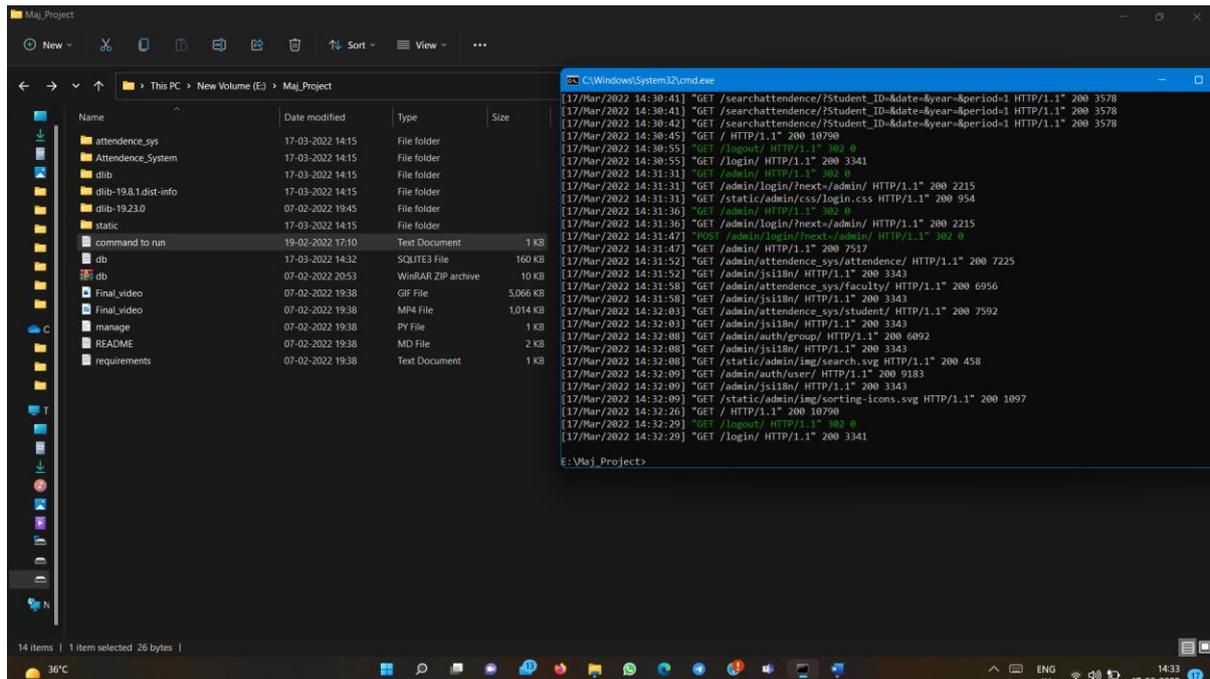
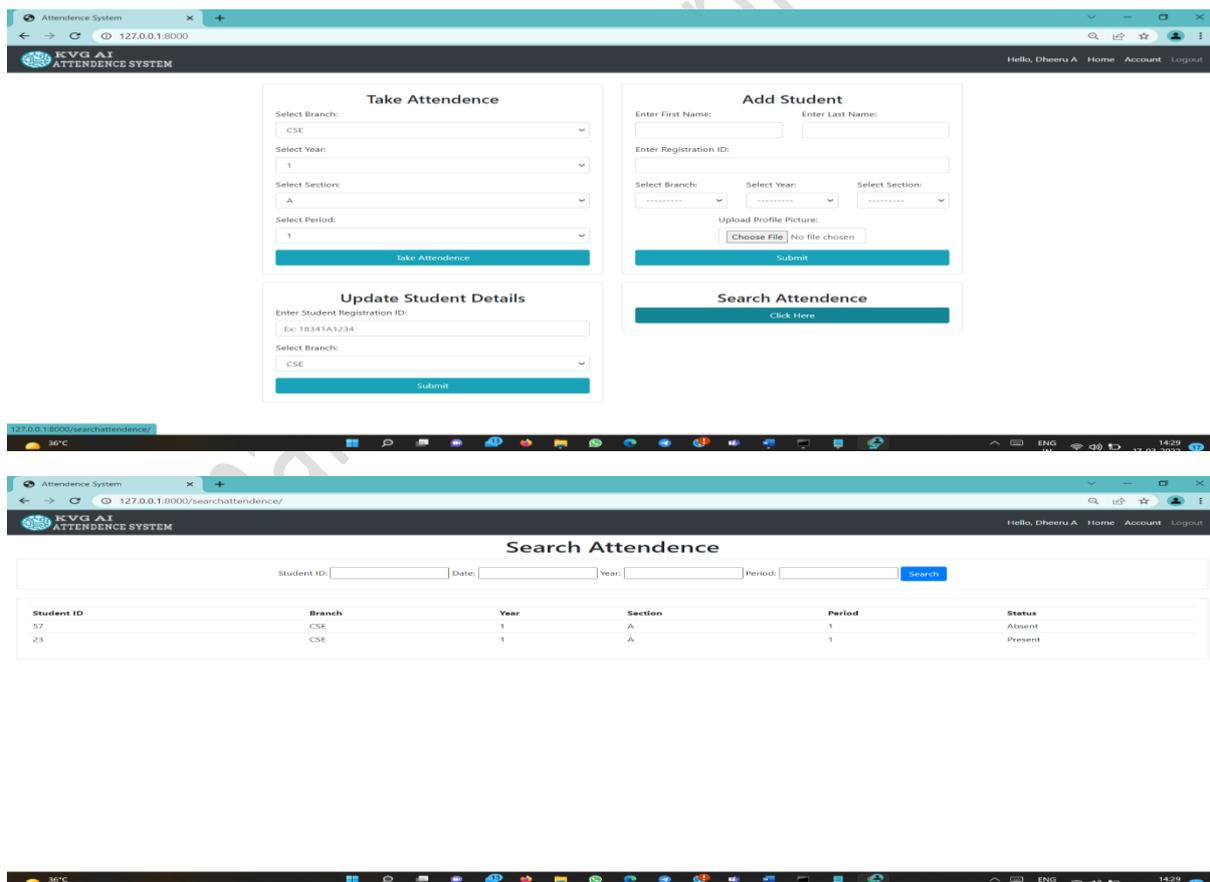


Fig 9: RESULTS



5.CONCLUSION:

In this gadget we have applied an attendance machine for a lecture, area or

laboratory with the aid of which lecturer or educating assistant can file students' attendance. It saves time and effort, particularly if it is a lecture with big wide

variety of students. Automated Attendance System has been predicted for the cause of lowering the drawbacks in the standard (manual) system. This attendance gadget demonstrates the use of photograph processing methods in classroom. This machine can no longer solely simply assist in the attendance system, but additionally enhance the goodwill of an institution.

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