

Attendance Mate


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PROBLEM STATEMENT

- Error prone manual processes
- Issues of proxy and inaccuracy
- Lack of real time tracking
- Non streamlined daily activities, such as mess and reading hall attendance
- Need of an efficient and accurate attendance system

NEED ASSESSMENT

- Efficiency and real time attendance management
 - Streamlined attendance management.
 - Rectify these concerns, provide a user-friendly, cost-effective, and accurate solution for seamless attendance tracking
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PROPOSED SOLUTION

- Create a Python-based facial recognition attendance system that is highly customizable and capable of detecting and recognizing faces with exceptional accuracy.
- The system should be able to mark attendance from photos captured within our app.
- In addition to Python, the system will incorporate various machine learning algorithms and facial recognition libraries to achieve optimal results.
- We will utilize this to record attendance in various settings such as classrooms, reading halls, and mess areas.
- As this project relies solely on an app and does not necessitate any physical camera installation, **the cost of implementation of this idea is very minimal.**



BENEFICIARIES

Our target audience is students in the campus, who want to cut through the hassle of marking attendance manually or making entries everytime they go in or out of any premises

The deployment locations encompass Classrooms, Reading Halls, Mess Areas or Any entrance/Exit Points

The project focuses on integrating the attendance system into a user-friendly mobile app, providing students with convenient flexibility for marking attendance.


SUCCESS METRICS

Accuracy Rate: The percentage of correctly identified and recorded attendances.

Real-time Response Time: The time taken for the system to register and reflect attendance changes in real-time.

User Adoption and Satisfaction: The percentage of students actively using the mobile app for attendance marking.

Operational Efficiency: The reduction in time and resources required for attendance management compared to traditional methods.



WORK DESCRIPTION

1. Image capture pipeline is generated using Google Colab to capture and assess images in our model for testing
 - a. https://colab.research.google.com/drive/1CwRFTdMMSO7tiShFgHXa_mqwnxih1qWr?usp=sharing
2. Use YOLO to extract the face and Keras VGGFace to extract face embeddings
 - a. YOLO V8:
<https://colab.research.google.com/drive/1lwH6pUz-o7FRxxqSYAgUatsNkhYTag6l?usp=sharing>
 - b. MTCNN :
 - c. https://colab.research.google.com/drive/1Mteo8sz1OehoxCDr4_ajPt07Y_DN80G-?authuser=
3. The embeddings of positive, anchor, and negative images are passed into the Siamese network which uses the Triplet loss function during training
 - a. <https://colab.research.google.com/drive/1Qg3VNibMj6gUrX1su-hyle2XLq54k6UM?usp=sharing>




```
▶ similarity_same_images = cosine_similarity(aniket2_em, aniket1_em)  
print(similarity_same_images)
```

```
[[0.7677909]]
```



FUTUR E

- Had a talk with SAFE Team, will be scheduling a meet with respective professors in order to understand the working of SAFE app to further improve our model
 - Implement Face Image Quality Assessment to ensure high performance face recognition systems
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CHALLENGES


- Dataset of students images to finetune the model
- GPU to train the model
- Finding a person for app development
- Seeking an individual for app development





FINANCES

ITEMS	AMOUNT	REMARKS
FUNDING PROVIDED	0	
BALANCE	0	



GANTT CHART OF FUTURE PLANS

Steps	March	April	May
Talk with safe people			
Understand OFIQ library and how to use it			
Create app which runs the model and checks with location to verify			
Deploy app			