Presentation On
“FACE RECOGNITION BASED ATTENDANCE SYSTEM”
By

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Aim:

¢The main aim of the product is to save time of staff & students in this hectic world by detecting face and registering it to database on go. The system will record the face of every person and record it in the database with a timestamp.

Objectives:

- Face Recognition systems are becoming increasingly important in today's extremely busy world. People are always short on time with the myriad tasks they need to accomplish in the limited 24 hours. Therefore, the Face Recognition systems are important as they help them to take attendance quickly without wasting much time & effort.
- The purpose of a Face Recognition system basically is to detect the face of an individual and mark entry in the database. Moreover, it involves a number of factors to create personalised lists of useful and interesting content specific to each user/individual. Face Recognition systems are Artificial Intelligence based algorithms that skim through the whole image and create a unique face code every individual. These codes are based on their tone, shape, size, and relative distance. This is achieved through predictive modeling and heuristics with the recording available.

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Problem Statement

- Develop a Face Recognition Based Attendance System to provide student id & student name with time of the face is matched.
- **What is a Face Recognition system?**
- Face recognition is a method of identifying or verifying the identity of an individual using their face. Face recognition systems can be used to identify people in photos, video, or in real-time. Face recognition systems use computer algorithms to pick out specific, distinctive details about a person's face. These details, such as distance between the eyes or shape of the chin, are then converted into a mathematical representation and compared to data on other faces collected in a face recognition database. The data about a particular face is often called a face template and is distinct from a photograph because it's designed to only include certain details that can be used to distinguish one face from another.

Methodology

¢Machine learning algorithms in recommender systems are divided into two categories: face detection and face recognition. Modern recommender systems combine both approaches.

¢Let’s have a look at how they work using Face Recognition Based Attendance Systems as a base.

A) Face Detection System

¢The Face Detection system is a method to convert given images into a mathematical equation or representation format. This representation only contains face landmarks like nose, eyes, eyebrow, chick, mouth, ear and their relative distance, etc. The other part of the image is discarded as they are of no use when we only have to work with face, so encoded face landmarks are only required.

B) Face Recognition System

¢As face landmarks are found in encoded mathematical format, now we only have to match this mathematical equation with the equation stored in the database. Any images having matches with similarity over 70% are said to be the same image. For this project we had used the LBPH Algorithm. The Local Binary Pattern Histogram(LBPH) algorithm is a simple solution on face recognition problems, which can recognize both the front face and side face. However, the recognition rate of LBPH algorithm under the conditions of illumination diversification, expression variation and attitude deflection is decreased.

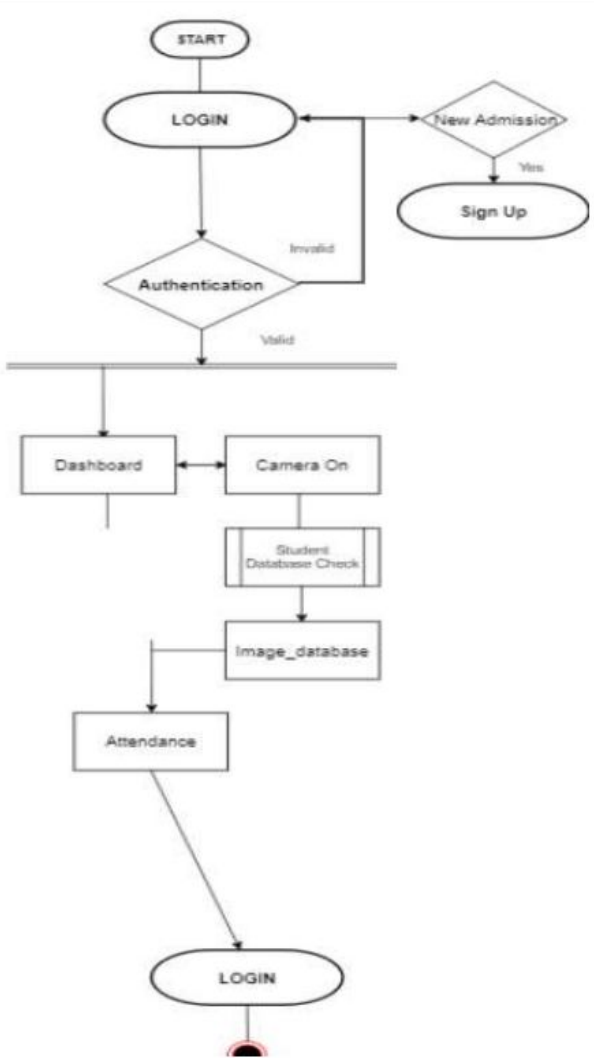
Drawbacks of existing system

Manually taking attendance is quite hectic work for both staff and students also. As staff have to maintain the ledger of all students of each day, each lecture and also they have to maintain and store it in the office for quite a long time. As students come every semester, every year, this ledger will only grow and grow bigger as time goes on. And as records are becoming larger, it will become very tedious to find specific details. And analysing is also not possible on the big record as it has to be done manually. Even more, it becomes very difficult to handle irregular exceptional cases, as one has to do the whole procedure again for a single case which is not very efficient. And any correction in record is not easy to be done as there might be multiple copies of same record, to do that one have to run to those n offices.

Design Details

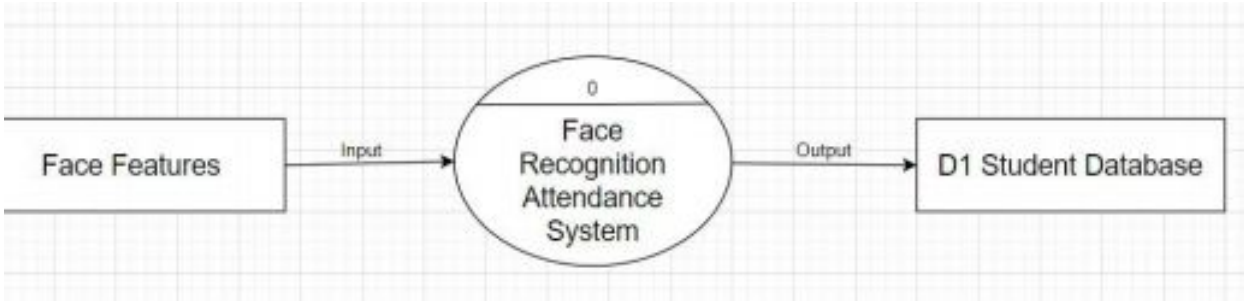
- **Design of System:**
- Design of Face Recognition Based Attendance System is based on Haar feature-based cascade classifiers Face Recognition Based Attendance System . It classifies the detected face as matched or unmatched.
- **Data Collection**
- Data is collected from camera or images and a database is created for the same
- **Data Preparation and Training**
- Data is prepared from different students from their images.
- **GUI for Users**
- The GUI is made for users which are made from Tkinter.

Flowchart

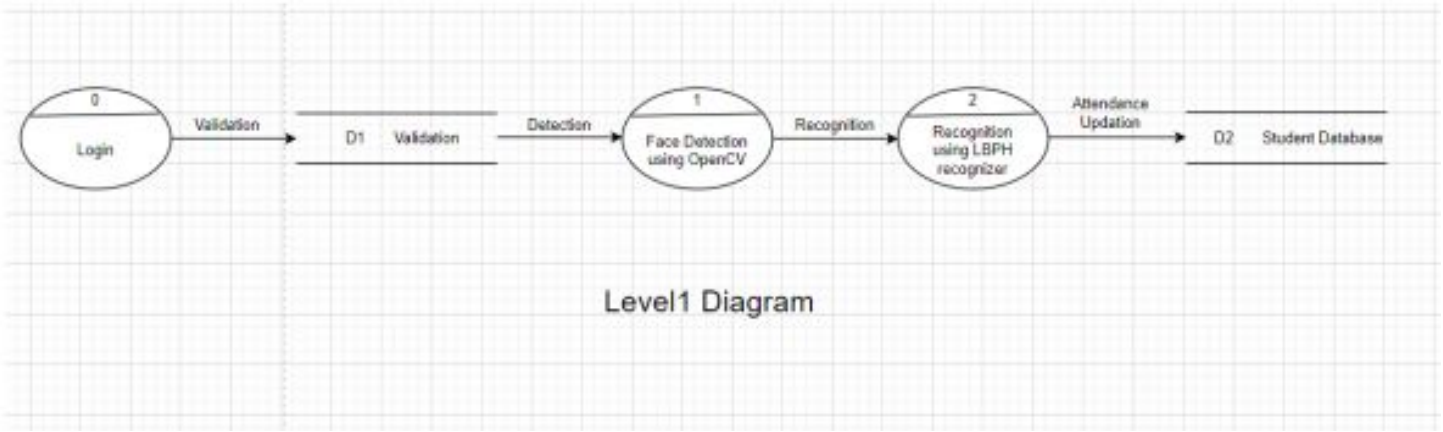

START
LOGIN
New Admission
Yes
Sign Up
Invalid
Authentication
Valid
Dashboard
Camera On
Student Database Check
Image_database
Attendance
LOGIN

Data flow diagram

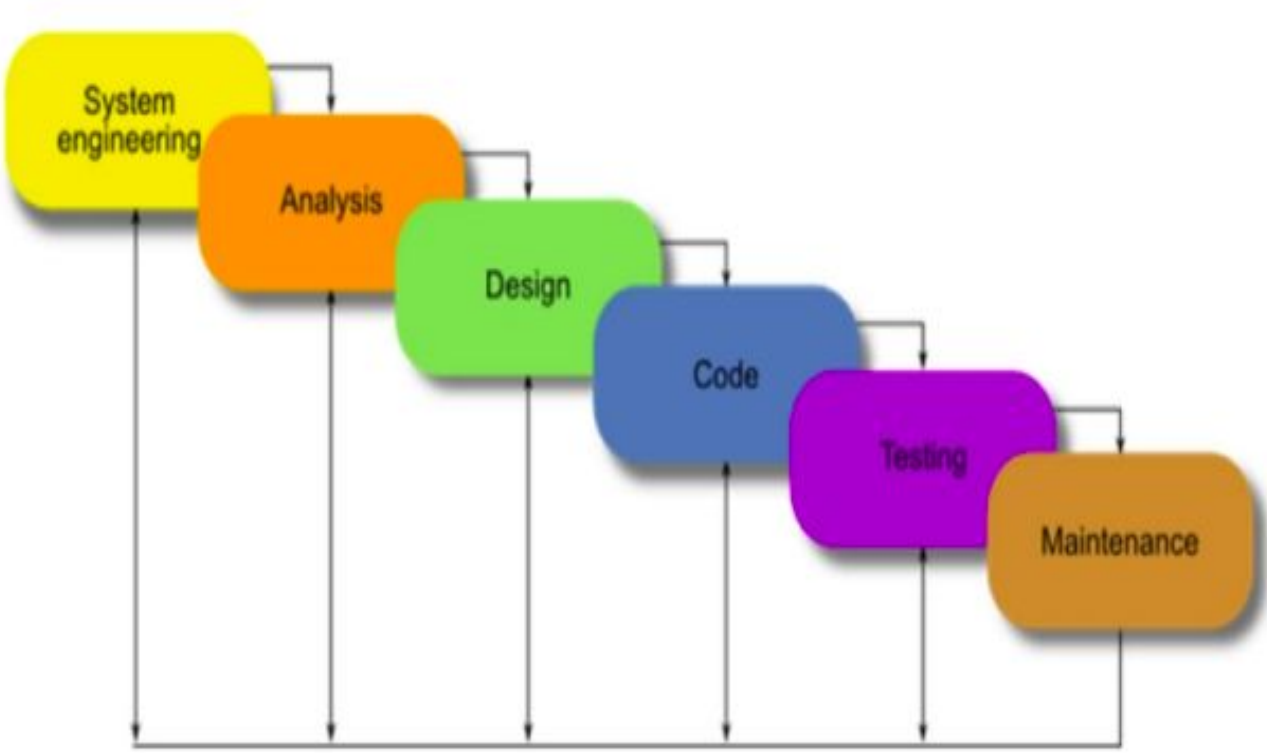
Level 0



Level 1



Process Model



Technologies used:

- **Hardware Used**

  Any Computer, Laptop ,Mobile can be used for accessing this system

- **Software Required**

  No Special Special Software required

- **Programming Languages Used**

  Python

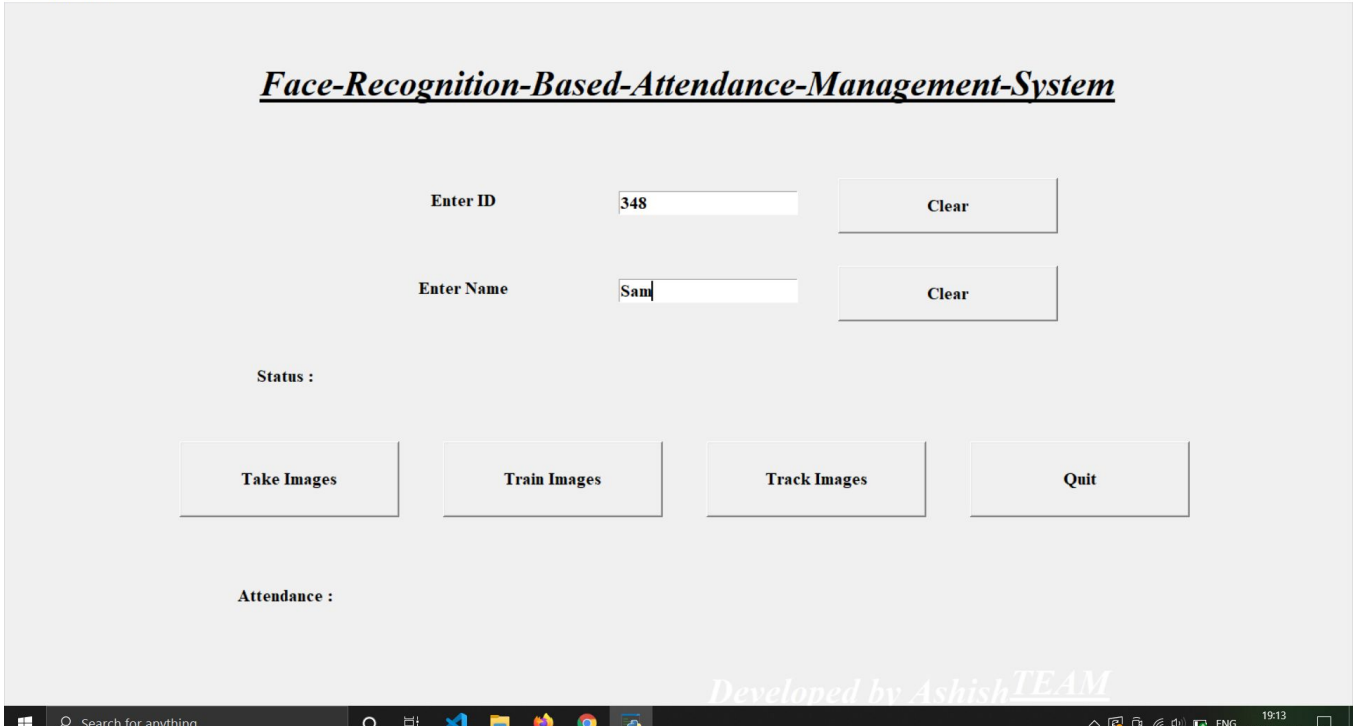
Test cases and result:

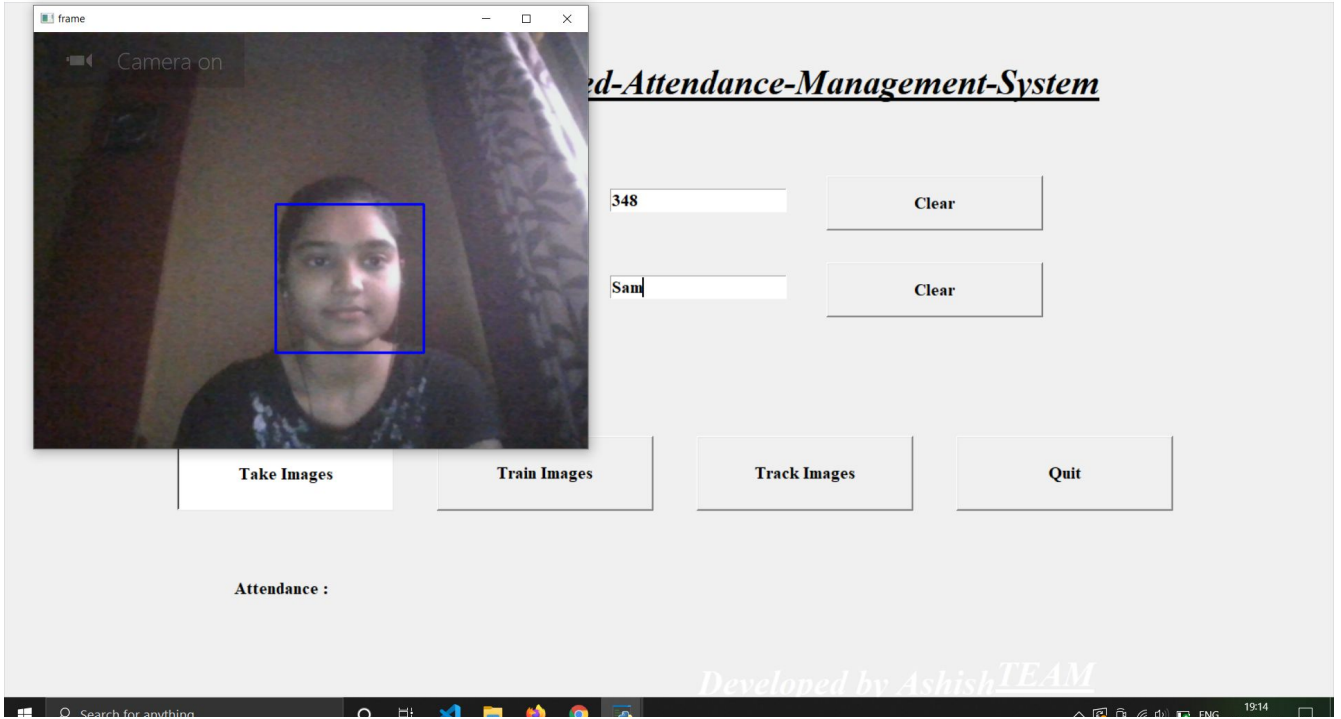
TEST ID	TEST DESCRIPTION	EXPECTED RESULT	ACTUAL RESULT
1	SCAN USER	TAKEN IMAGES STORED IN DATABASE	IMAGES FOUND IN DATABASE (PASS)
2	REGISTER USER	USER ID AND NAME IS DATABASE	DATA FOUND IN DATABASE (PASS)
3	RECOGNIZE USER	SHOW ATTENDANCE MARKED IN DATABASE	MARKED ATTENDANCE FOUND IN DATABASE (PASS)

Conclusion: Thus, we have the Face Recognition Based Attendance System in Python using Haar feature-based cascade classifiers which is simple and easy to use .

It is design in such a way that a lay man can also access the system and have no problem .

Future Scope :This Face Recognition system can further be improved more and add different features like Improved User Interface, More combined methods for face recognition can be used, Admin Controls can be increased.


Face-Recognition-Based-Attendance-Management-System
Enter ID
348
Clear
Enter Name
Sam
Clear
Status :
Take Images
Train Images
Track Images
Quit
Attendance :
Developed by AshishTEAM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Camera on
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348
Clear
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Take Images
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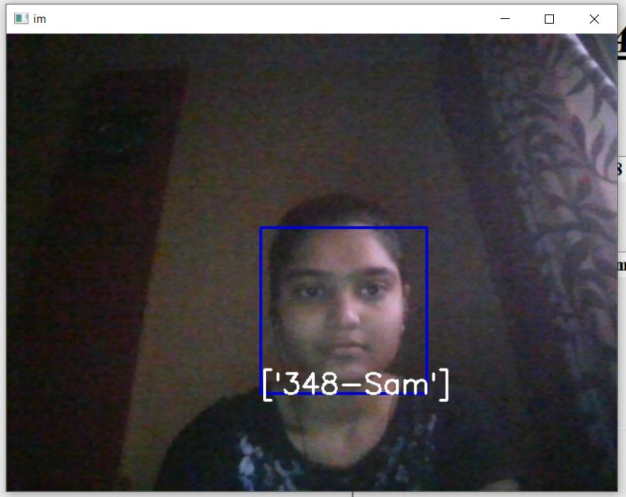
Track Images
Quit
Attendance :
Developed by AshishTEAM



Attendance-Management-System

Clear

Clear

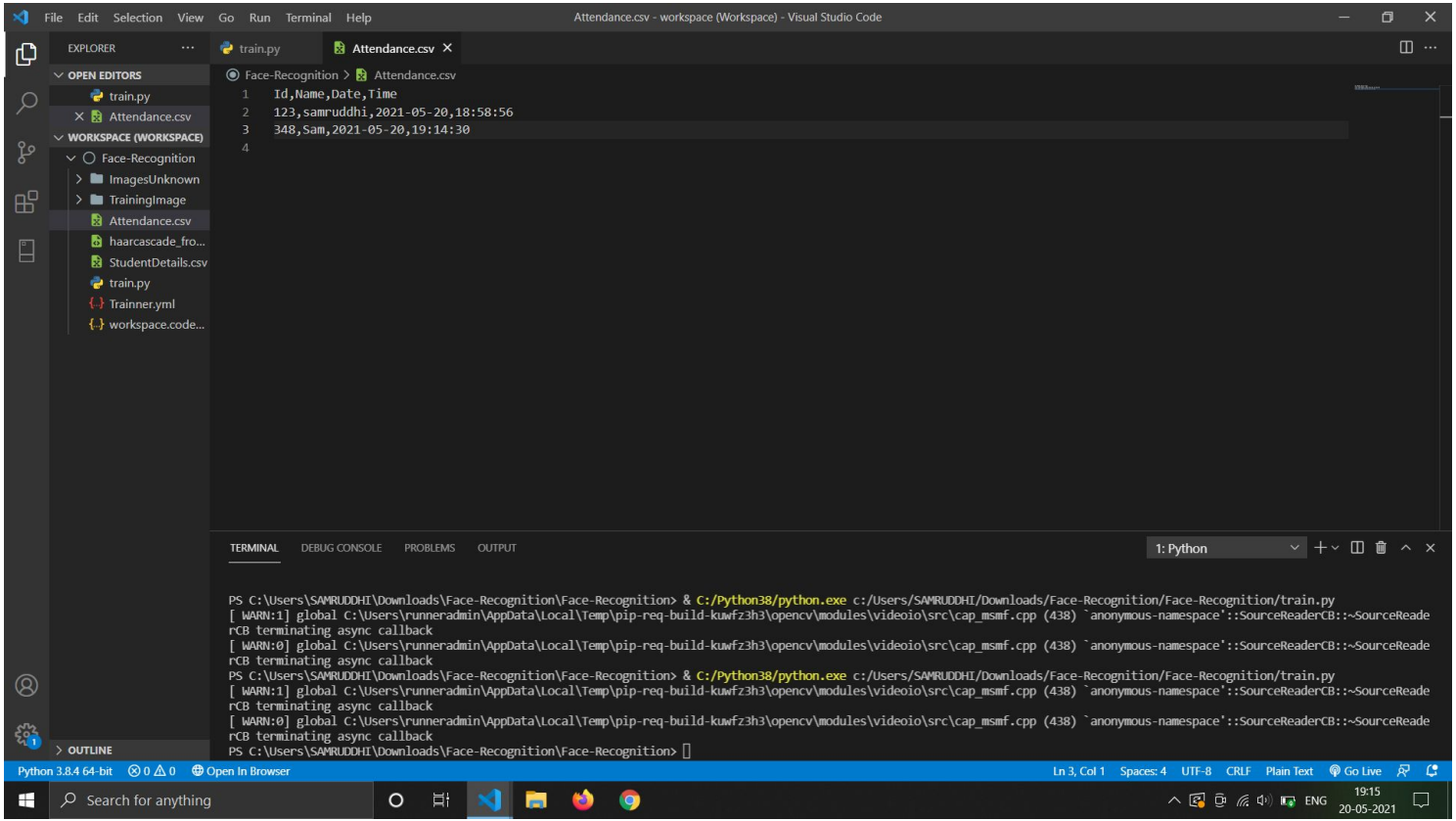
Image Trained

Track Images

Quit

Attendance :

Developed by AshishTEAM


File Edit Selection View Go Run Terminal Help
Attendance.csv - workspace (Workspace) - Visual Studio Code
EXPLORER
OPEN EDITORS
train.py
Attendance.csv
WORKSPACE (WORKSPACE)
Face-Recognition
ImagesUnknown
TrainingImage
Attendance.csv
haarcascade_fro...
StudentDetails.csv
train.py
Trainner.yml
workspace.code...
OUTLINE
train.py
Attendance.csv
Face-Recognition > Attendance.csv
1 Id,Name,Date,Time
2 123,samruddhi,2021-05-20,18:58:56
3 348,Sam,2021-05-20,19:14:30
4
TERMINAL
DEBUG CONSOLE
PROBLEMS
OUTPUT
1: Python
PS C:\Users\SAMRUDDHI\Downloads\Face-Recognition\Face-Recognition> & C:/Python38/python.exe c:/Users/SAMRUDDHI/Downloads/Face-Recognition/Face-Recognition/train.py
[WARN:1] global C:\Users\runneradmin\AppData\Local\Temp\pip-req-build-kuwfz3h3\opencv\modules\videoio\src\cap_msmf.cpp (438) `anonymous-namespace'::SourceReaderCB::~SourceReaderCB terminating async callback
[WARN:0] global C:\Users\runneradmin\AppData\Local\Temp\pip-req-build-kuwfz3h3\opencv\modules\videoio\src\cap_msmf.cpp (438) `anonymous-namespace'::SourceReaderCB::~SourceReaderCB terminating async callback
PS C:\Users\SAMRUDDHI\Downloads\Face-Recognition\Face-Recognition> & C:/Python38/python.exe c:/Users/SAMRUDDHI/Downloads/Face-Recognition/Face-Recognition/train.py
[WARN:1] global C:\Users\runneradmin\AppData\Local\Temp\pip-req-build-kuwfz3h3\opencv\modules\videoio\src\cap_msmf.cpp (438) `anonymous-namespace'::SourceReaderCB::~SourceReaderCB terminating async callback
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PS C:\Users\SAMRUDDHI\Downloads\Face-Recognition\Face-Recognition>
Python 3.8.4 64-bit
0 0
Open In Browser
Ln 3, Col 1
Spaces: 4
UTF-8
CRLF
Plain Text
Go Live
Search for anything
ENG
19:15
20-05-2021