Owner : Meet Vankar

IBP - Swimming Pool Test Checker
Interactive Face Recognition System and DBMS

Notes :-

- In the excel file, first two columns after index column must be '*Name*' and '*Roll_No*'.
- Main folder's, main file's, worksheet's names, and cascade-classifier must not be changed after initiation, they must be kept the same.
- Only 1 worksheet must be there in the excel file. You can keep other data in a separate file.
- For any modification in the data under '*Name*' or '*Roll_No*' columns, use programs only. Or else, you'll have to change the same in the '*main dataset folder*'.
- Except the above limitation, you are free to add/remove/change data in the excel sheet, manually.

➢ First, you should have installed the following libraries : numpy, pandas, cv2, PySimpleGUI, shutil, pickle, openpyxl

Instructions and Notes to run the program files :-

0. Before anything else, run '*Stage0_Parameters*'.
   o It will initiate all required files and folders. Double click, let it run, and wait till it's run.

1. For inserting a person's face/record, run '*Stage1_Scan*' file.
   o Double click. Keep reading the instructions on the terminal.
   o When the face is scanned, entering '*Name*' and '*Roll_No*' field is mandatory. It's recommended that you enter all other fields as well.
   o Then press '*Submit*' and wait till program asks you to exit.

2. To compile all entered face information with the person's names, run '*Stage2_Train*' file.
   o You can insert many people at once through successively running '*Stage1*' for each person individually.
   o However, when all insertions are done, you must run '*Stage2*' to incorporate results for newly inserted records.
   o Unless you run '*Stage2*', newly scanned faces will show '*Not Recognized*'.

3. To start testing, run '*Stage3_Test*' file.
   o Double click it. The camera will start and you will have to let it keep running.
   o It is preferred that you ask the '*Subject (the person being scanned his face)*' his name or roll_no before his scan. Then, when he will scan, you can verify whether his provided info matches with the results shown by the program or not.
   o Also, while being tested, Ask the '*subject*' to orient his face in slightly different directions, so that you can verify the above point accurately.

4. For any modification in '*Database Excel File*', use '*StageX_ModifyDBMS*'.

⇒ Inserting 'data/info' via directly opening the excel file and writing in it – is called 'Manual Insertion'.

⇒ You must not manually insert '*New Records/Rows/Entries*' in the excel file. You must not manually modify first three columns' data (until and including *Roll_No* column).

⇒ Except the above point, you are free to manually modify existing data, insert data in the empty cells to remove Missing-Values.

➤ While searching for data, via '*option-5*', note that if multiple records have the same data, only the topmost will be shown. Therefore, search via columns containing unique values is preferred.

o Double click the '*StageX*' file to run it.

o All the instructions will be provided on the terminal window while runtime itself. Follow them and you can easily do the operations.

o If you are not satisfied with any operation in the program file, you should do it via the excel file itself.

TLDR : Instructions to Use :-

1. First run '*Stage0_Parameters*' program file.

2. Enter each new record/student by running '*Stage1_Scan*' program. First, it will scan the person's face. When it is done, it will ask to enter mandatory fields '*Name*' and '*Roll_No*'. You may enter other data, however, it is optional.

3. After all the scans, run '*Stage2_Train*' file to train all the scanned persons.

4. When training is done, you can test for all the trained persons by running '*Stage3_Test*' file. When it is run, it will create a '*box*' around the person's face, standing in front of camera. If it identifies a person, it will show its predicted-person's '*Roll_No*' and '*Name*' above the box. If it does not match with any person in trained dataset, it will show '*NOT_RECOGNIZED*' above the box.

5. Using '*StageX_ModifyDBMS*' file, you can perform the following operations :
   i) Columns insertion : give titles of the columns. It will automatically sync with other files.
   ii) Columns/Rows deletion : give titles of columns / roll_nos of rows to delete them.
   iii) Search Record : give roll_no & it will show all the information of that person.
   iv) Find/Delete Empty-Cells : It provides different options (instructions will be shown as code is run) according to which you can find records with empty-cells/missing-data. You can delete corresponding records as well according to options.
   v) Display Dataset : Instead of opening and closing Excel file manually, this will show/print the whole database on the terminal-window.