# FACIAL RECOGNITION

## STRUCTURE

* The repository consists of four folders and 3 python scripts
* Facial\_recog

……> datasets

……> example

……> outputs

Encode\_faces.py

Recognize\_face\_video.py

Recognize\_face\_image.py

Encodings.pickle

## DATASETS

* Suppose there are four authorized users then datasets contain four subfolders with their names as the folder names and each folder has the respective user’s pictures
* All the images are in standard quality for faster training purposes

## ENCODINGS

* We iterate through every image ,we extract the name from the path,convert the opencv image to dlib ordering and store the ordering in a variable ‘rgb’.
* Then we detect the x and y coordinates of the defining points of the face in the images and store it in ‘boxes’.
* Then we compute the facial encodings using ‘rgb’ and ‘boxes’ and store in encodings
* Then we loop through the encodings and add the encoding and name to knownnames and encoding
* Then we create a dictionary containing name and encodings and add the knownnames and encoding and write it to the encodings.pickle file .

## DETECTION

* We can either detect it in real time using a video stream or by an image file.
* Since the implementation is to be in real-time we stick to the videostream method.
* We start the videostream first,then convert the opencv image to dlib ordering and store the ordering in a variable ‘rgb’, detect the x and y coordinates of the defining points of the face in the images and store it in ‘boxes’, we compute the facial encodings using ‘rgb’ and ‘boxes’ and store in encodings.
* We then loop over the encoding ,compare it with the encodings from the pickle file.
* If a match is found ,we find the indexes of all the matched faces,calculate the total number of times each face was matched and we select the name with the maximum number of votes and append it to names.
* Then we loop over the recognized faces ,we rescale the face co-ordinates ,construct a rectangle around it and label it with the name of the user from the list’names’.
* Then after the user presses q we exit the process
* Suppose there is no match then the name is displayed as “Unknown”

## ENHANCEMENTS

* We are running the facial recognition system parallely with the access control system,but it can also be incorporated with the access control system to make a facial recognition based access control system.

## SCREENSHOTS





