Documentation for @Johnny\_Bosco facial recognition api project

Team: Gate apps

Summary: Gate app is an application that allows the gateman give notification to the owner of the house that a visitor is around to see him and also get notification that a owner is expecting a visitor.

ML idea: Facial recognition. A house owner uploads up to three pictures of himself and if a visitor is coming to visit, his/her pictures are uploaded too. When a person arrives the estate, it takes a picture of the person at the gate, it then runs the facial recognition across the database it has. If found in the member database, identifies the member. But just verifies the person is a welcomed person for the visitor. It would increase security which is the sole purpose of the app by eliminating impersonation whatsoever.

Flow Process: I imported the necessary libraries, then I defined some base folders to make the code easy to process. After that I created some functions as listed below:

1. Extract face function with input filename(picture): This function uses matplotlib and mtcnn to get and detect face in a picture
2. Get\_embedding function with input filename(picture format): This function uses the extract face function and VGGFace library, resnet50 pretrained model to get the embeddings and predict the preprocessed sample ie the converted picture.
3. is\_match matches the known embedding vs the new embedding and score it to know how similar they are, less than 0.5 means similarity, over 0.5 means they are not similar.
4. We then have the member and visitor functions that get and save the embeddings of the members files and visitors files.
5. Cam function takes a picture on command and saves the embedding
6. Check then checks through the members and visitors files to see if the picture taken by the cam function is similar to the already stored pictures in the respective folders. So if a member comes into the estate, he/she uploads three or more pictures, and if he/she is expecting a visitor he/she uploads his/her pictures using the gate app for verification. The check function then checks through to see if the picture taken at the gate by a standby camera is similar to anyone in the database.