Goa Police Hackathon 2022
Abstract Submission

Team Details:

Team Name: *CocoonifyAi*

Problem Statement: *Facial Recognition*

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An explanation of the problem statement.

The solution has to recognize and identify the face of the person using various databases as well as searching across open databases or using OSINT tools.

Prepare the solution to deploy on different camera modules like CCTV, webcam, etc.

It should be able to detect faces irrespective of background and in different lighting conditions.

Must be able to detect almost all the visible faces present in a frame at a time.

Build a robust and efficient solution.

A solution to detect faces that may be partially visible due to the different angles of CCTV or webcam.

The solution must be able to handle different genders, skin colours, ages, facial features, and structures.

The proposed solution to the problem statement.

We will use open source python libraries/algorithms to look at a picture and detect faces.

Focus on each face and guess the person irrespective of the wrong direction and bad lighting.

Pick out unique features of the face that you can use to tell it apart from other people, like how big the eyes are, how long the face is, etc.

compare the unique features of that face to all the people you already know to determine the person's name.

We will use face landmark estimation to deal with the problem of the face turning in a different direction.
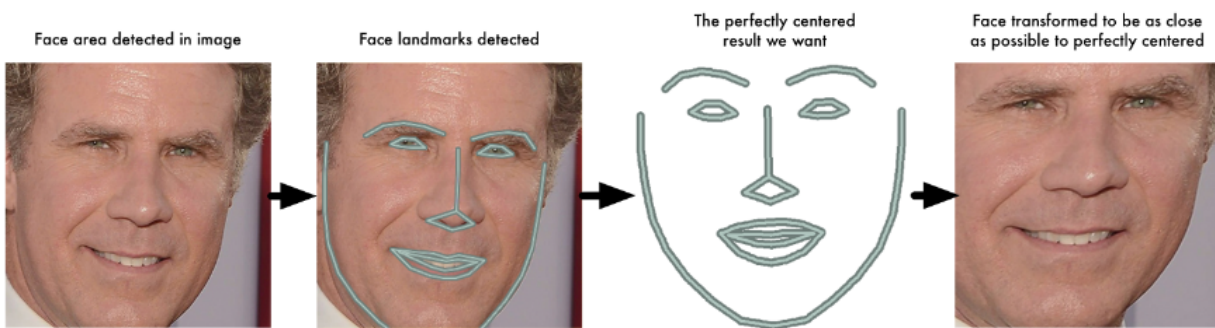
We will use face encoding to extract 128 features of the face which are then used to recognize an individual.
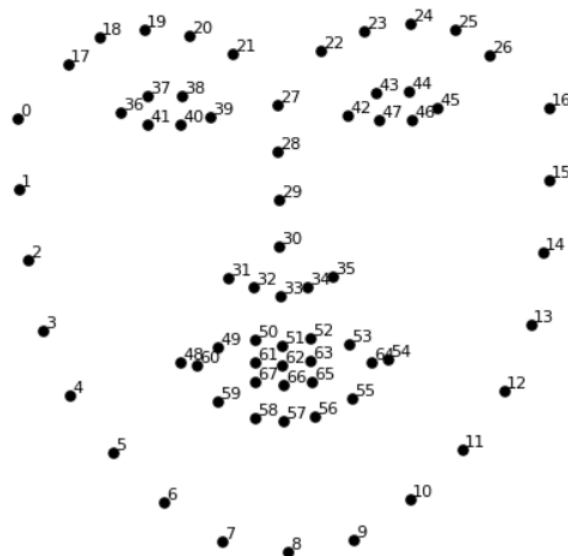
The 68 landmarks we will locate on every face. This image was created by Brandon Amos of CMU who works on OpenFace.

Then we will use the database available to identify the identity using methods like probabilistic hashing.

We will also use a model to predict basic features from the face like gender, race, age, etc.

Features of the final solution to be designed.

Multiple face detection and display with basic information.

Efficient face recognition.

Use devices like webcam, external camera, CCTV, and other external links to do face recognition.

It can be operated remotely to access devices like CCTV to monitor and face detection.

Use of external databases or open source databases to identify the face identity.

Extract EXIF data from the image to get image location, time, date, etc.

Detect an individual or multiple suspects directly in the live session with fast efficiency.

Use OSINT tools to search profiles matching images on different social media platforms.

Reason for opting for the problem statement.

The problem statement has a large-scale application in the field related to national security.

This will help in detecting as well as identifying missing people, criminals, and dead bodies, in a more efficient way, which will reduce the time taken by our task force like police significantly.

The task forces can monitor the suspect remotely by accessing devices like CCTV, etc.

The recent activities in our country point out the significance of solutions for problems like this are highly required.

Past expertise in the area.

We have previous experience in building efficient CNN models(Deep Learning models) to deal with problems related to Images.

Build solutions to problems like face mask detection, plant disease classifier, heart disease classifier using ECG Images, etc…

You can find all my projects on my GitHub.