High-Quality Facial Recognition System

Project Report

-D.BALA KOTESWARA SASTRY

1.INTRODUCTION:

A face recognition program is a software application for verifying a person and identifying him or her with a video or picture from a source.With the open source platform Intel called OpenCV, facial recognition can be done quickly and reliably. It reads the image and compares patterns based on the person's facial features.
Face recognition in a real-time setting has an exciting area and a rapidly growing challenge. High-Quality Facial Recognition System has many applications starting from mobile phones, biometrics to security cameras. The face detection process is an essential step as it detects and locates human faces in images and videos.

I build a Facial Recognition System using anaconda, Visual studio, Cmake, Dlib, Face-recognition, Imutils and OpenCV.

1.1Overview:

The steps of the project are:
1.At first, we will make **necessary Installations**

1. Activity 1: Anaconda
2. Activity 2: Visual studio
3. Activity 3: Cmake
4. Activity 4: Dlib, Face-recognition, Imutils, OpenCV

2.Create Dataset with necessary requirements here, I have taken Dhoni, Yuvaraj, Surya, Tony Stark, Modi and Harry Potter.
3.Then train our system by Face Encoding

4.Now, system is ready to Recognize Faces
5.Atlast Build Flask Application and run it.
Neural networks are integral for teaching computers to think and learn by classifying information, similar to how we as humans learn. With neural networks, the software can learn to recognize images, for example. We are trained by our elders that particular object names are taught to us and after we recognize it.
Natural language processing gives machines the ability to understand human language. As this develops, machines will learn to respond in a way a human audience can understand. In the future, this will dramatically change how we interface with all computers.
Deep Learning is a machine learning technique that enables machines to learn complicated patterns or representations in data.

The project features are the following:

1. Streaming video with OpenCV
2. Recognizing faces in an image(.jpg,.jpeg,.png)
3. Recognizing faces in a video (.mp4)

1.2PURPOSE

The objective of this project is to build a Facial Recognition application that can detect faces and recognize them. We are going to build this using Dlib which uses 128-point face detectors which outputs these 128 points from all the face and compares them with existing faces.

Project Flow:

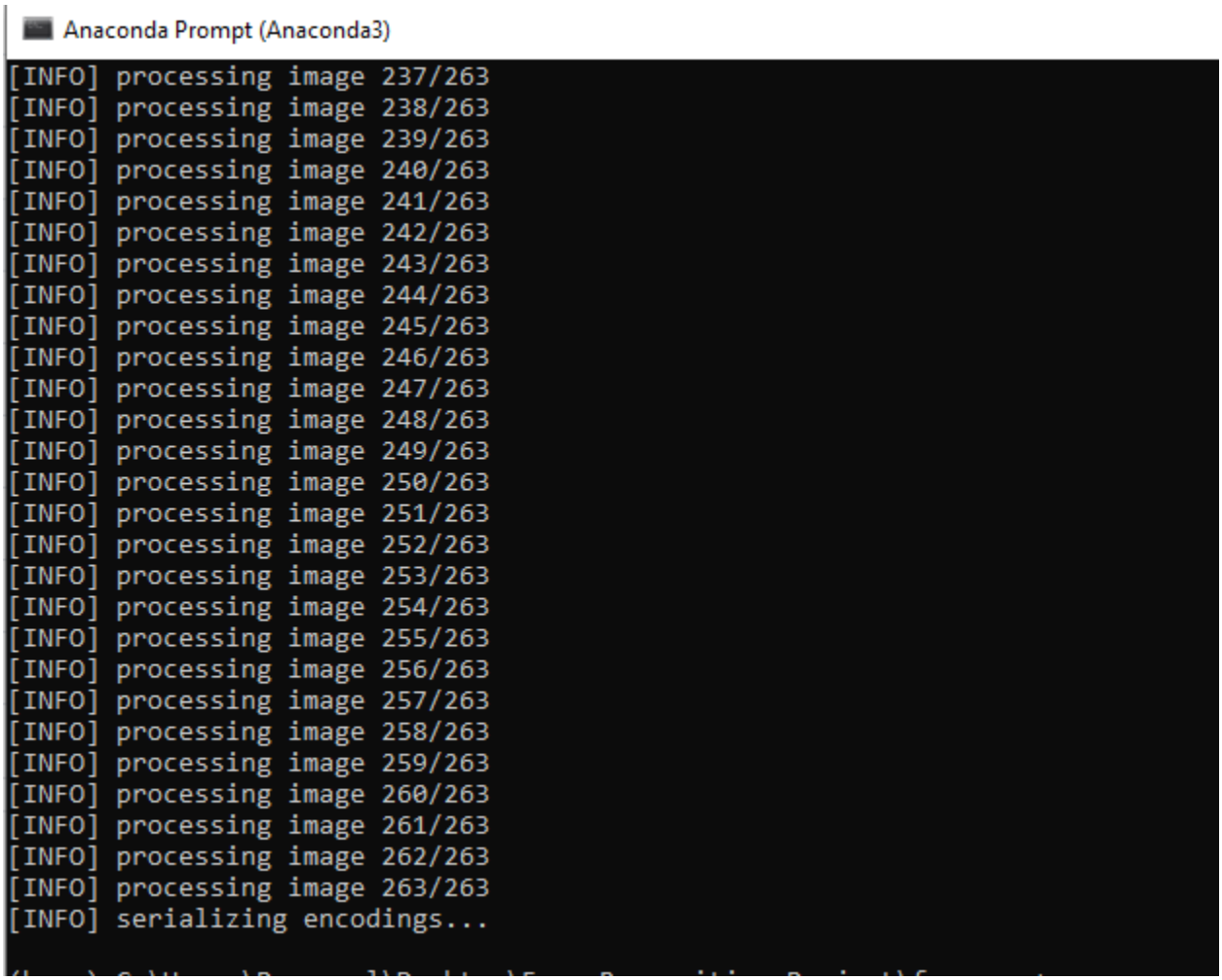
This project has two phases:
Phase 1: To implement detection of faces and
Phase 2: To recognize the faces.

2.RESULT:

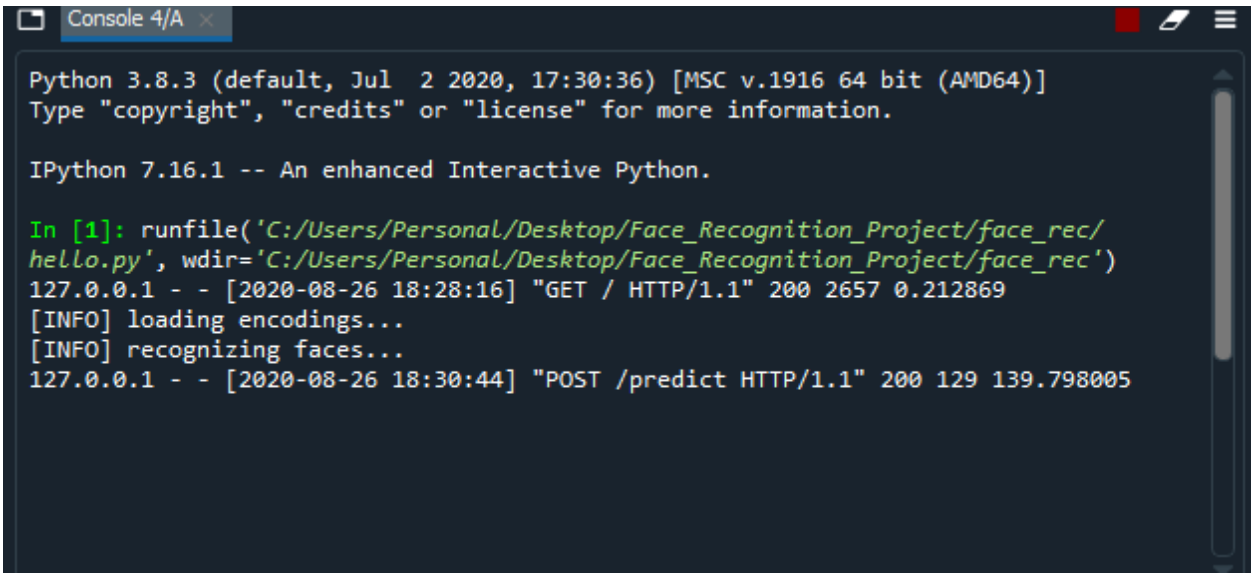
The result obtained when we run the following command on Anaconda prompt:

```
python encode_faces.py --dataset dataset --encodings encodings.pickle
```

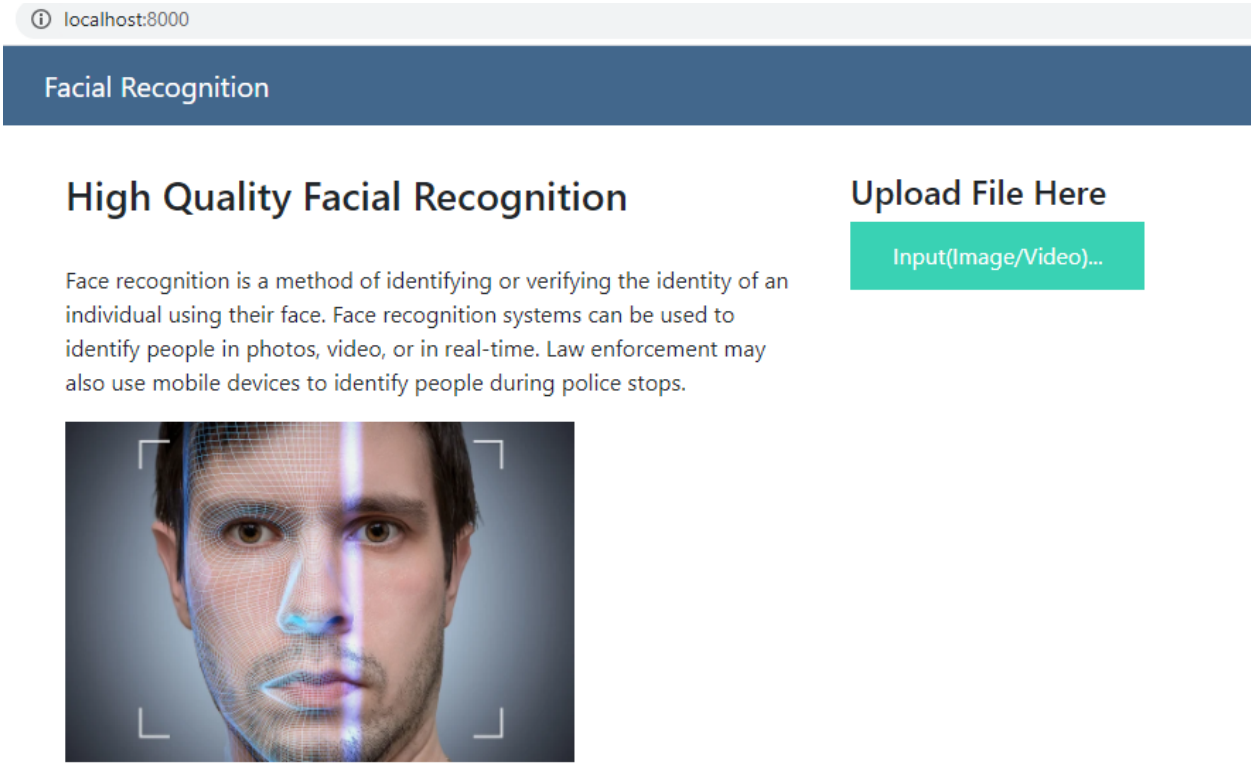
And thus, resulting in processing of images from the dataset folder. I have used 263 images of Dhoni, Yuvaraj, Surya, Tony Stark, Modi and Harry Potter.



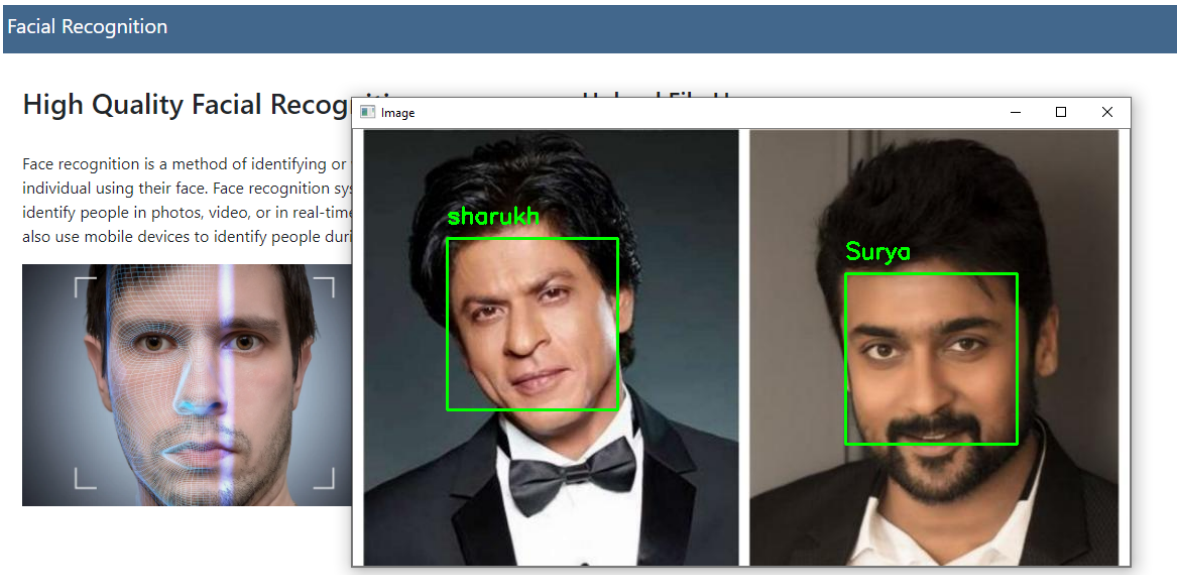
After the execution of the encode pickle file then we need to run the hello.py file.



Then open the browser with local host with port number taken (here I have taken Port No:8000).



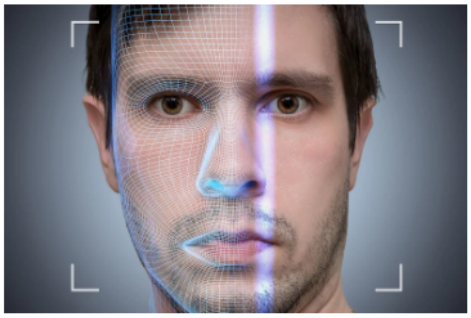
And give an input image/video file. And the results will be displayed in a new window. As shown below:



Facial Recognition

High Quality Facial Recognition

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. Law enforcement may also use mobile devices to identify people during police stops.



Upload File Here

Input(Image/Video)...

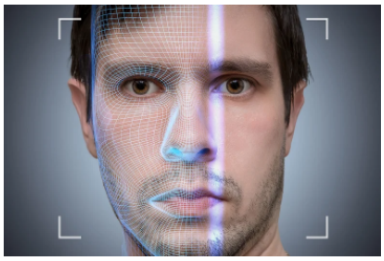
Prediction : sharukh,Surya

localhost:8000

Facial Recognition

High Quality Facial Recognition

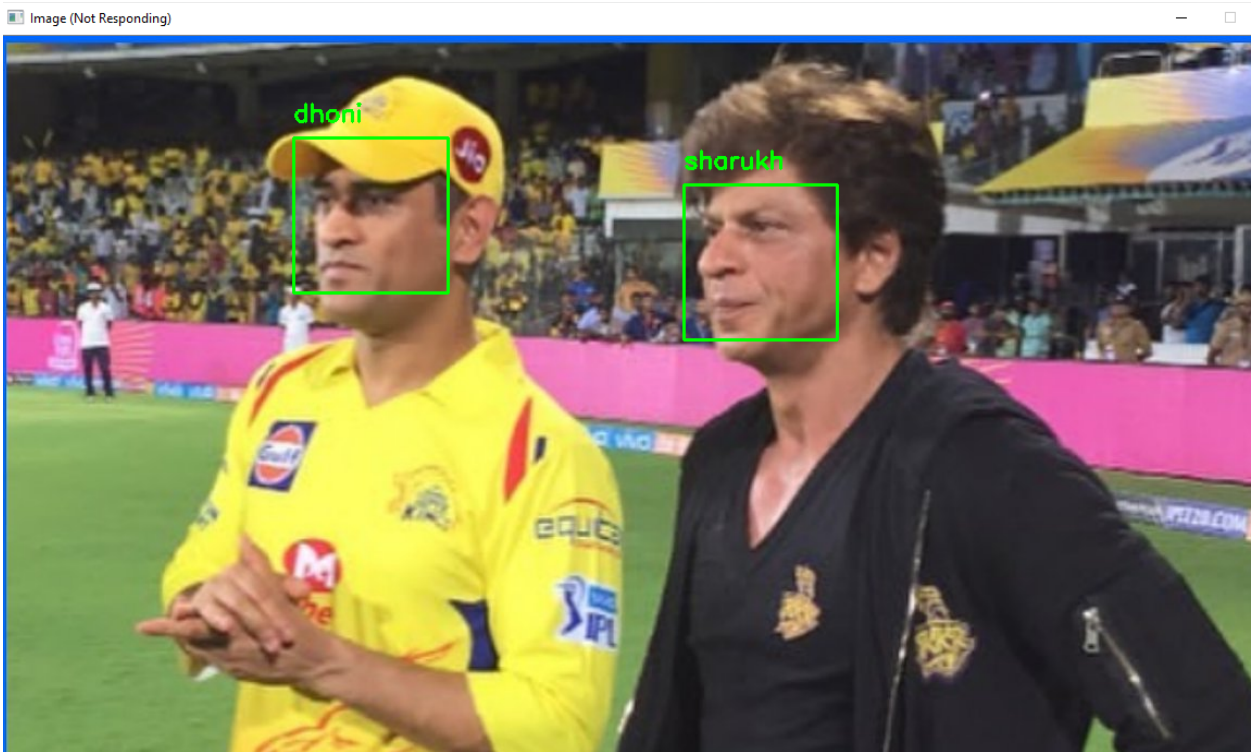
Face recognition is a method of identifying or verifying the identity of an individual using their face. Face recognition systems can be used to identify people in photos, video, or in real-time. Law enforcement may also use mobile devices to identify people during police stops.



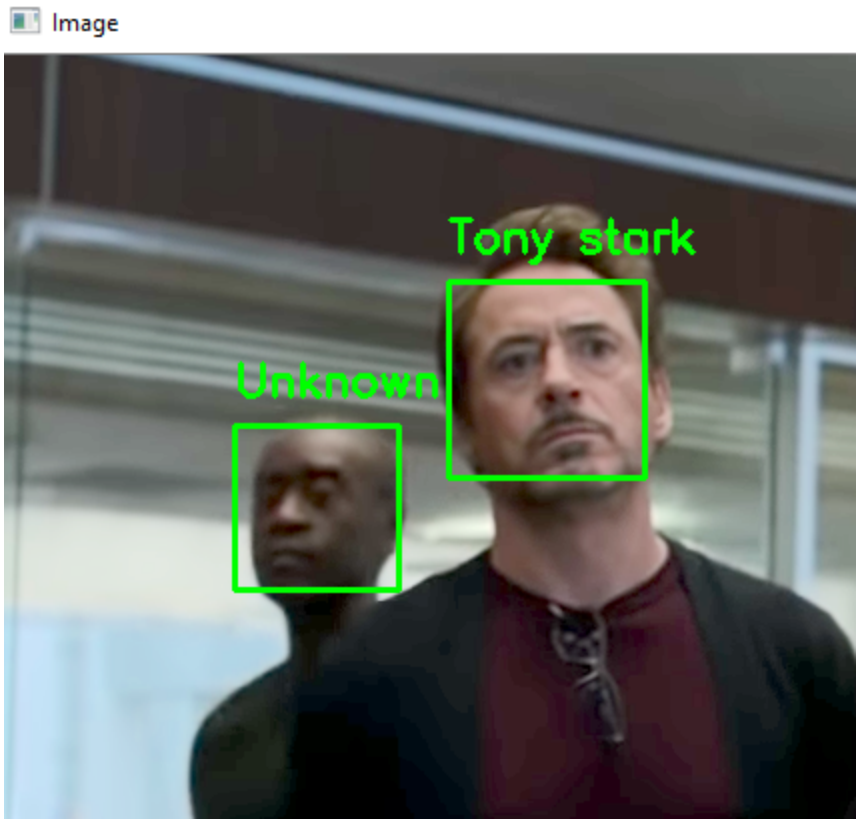
Upload File Here

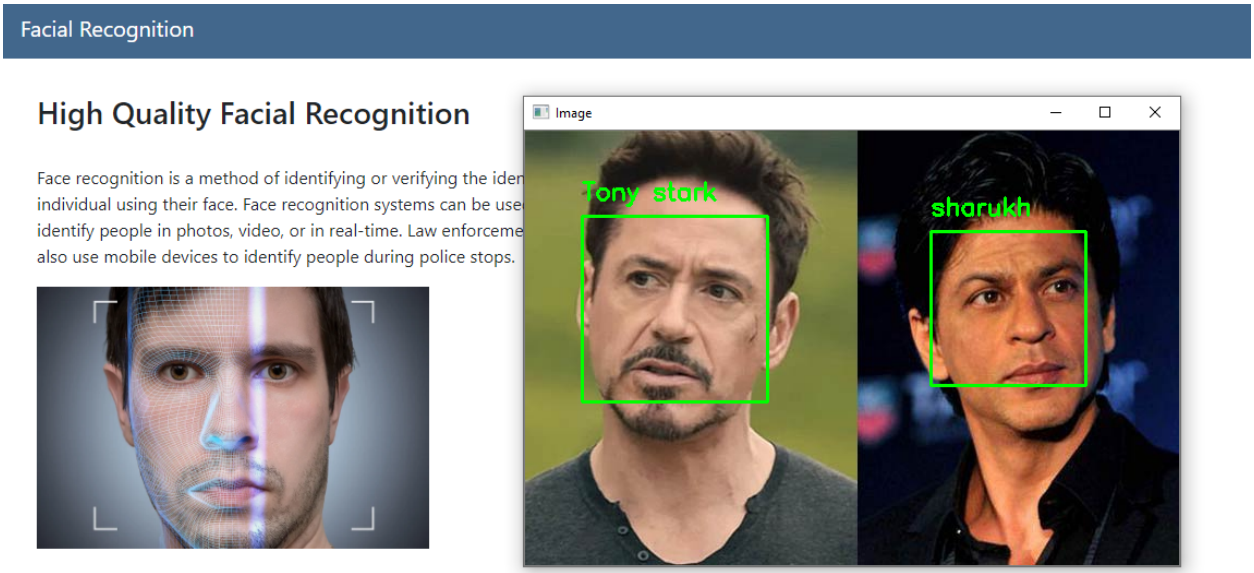
Input(Image/Video)...

Prediction : Harry Potter



Here we can see that it has correctly identified the faces and we have not trained the images of others who are present in image so it is showing “Unknown”.





3.APPLICATIONS:

Beyond just unlocking mobiles or laptops, the biometric software behind facial recognition applications can accurately identify faces today, better than other people can. Various industries are using facial recognition technologies. For the following purposes:

- security companies are using facial recognition to secure their premises.
- Immigration checkpoints use facial recognition to enforce smarter border control.
- Ride-sharing companies can use facial recognition to ensure the right passengers are picked up by the right drivers.
- Academic institutions can use facial recognition to take daily attendance of their students.

4.Conclusion:

This is a basic project probably it can't be used in real time but it helps to learn the skills required to build a real time application. In this we also used Histogram Oriented Gradient (HOG) for better and fast recognition. This facial recognition is being used in many areas like commercial and non-commercial places.

In the last 20 years, facial recognition technology has come a long way. Today can

check identity information automatically with regard to safe transactions, tracking, security purposes and buildings access control. Such systems normally work in controlled environments and algorithms of recognition may manipulate environmental constraints to achieve high accuracy of recognition. Yet face-recognition technologies of next generation will be commonly used in smart settings where computers and machines are more like supportive helpers.

5.FUTURE SCOPE:

Today, one of the fields that uses facial recognition the most is security. Facial recognition is a very effective tool that can help law enforcers recognize criminals and software companies are leveraging the technology to help users access their technology. This technology can be further developed to be used in other avenues such as ATMs, accessing confidential files, or other sensitive materials. This can make other security measures such as passwords and keys obsolete.

Another way that innovators are looking to implement facial recognition is within subways and other transportation outlets. They are looking to leverage this technology to use faces as credit cards to pay for your transportation fee. Instead of having to go to a booth to buy a ticket for a fare, the face recognition would take your face, run it through a system, and charge the account that you've previously created. This could potentially streamline the process and optimize the flow of traffic drastically.

~~THANK YOU~~