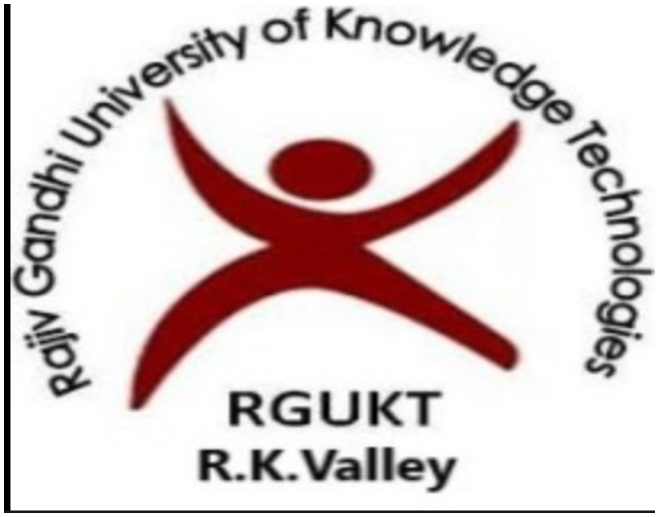

Face Recognition

Machine Learning Project

Under the Guidance of

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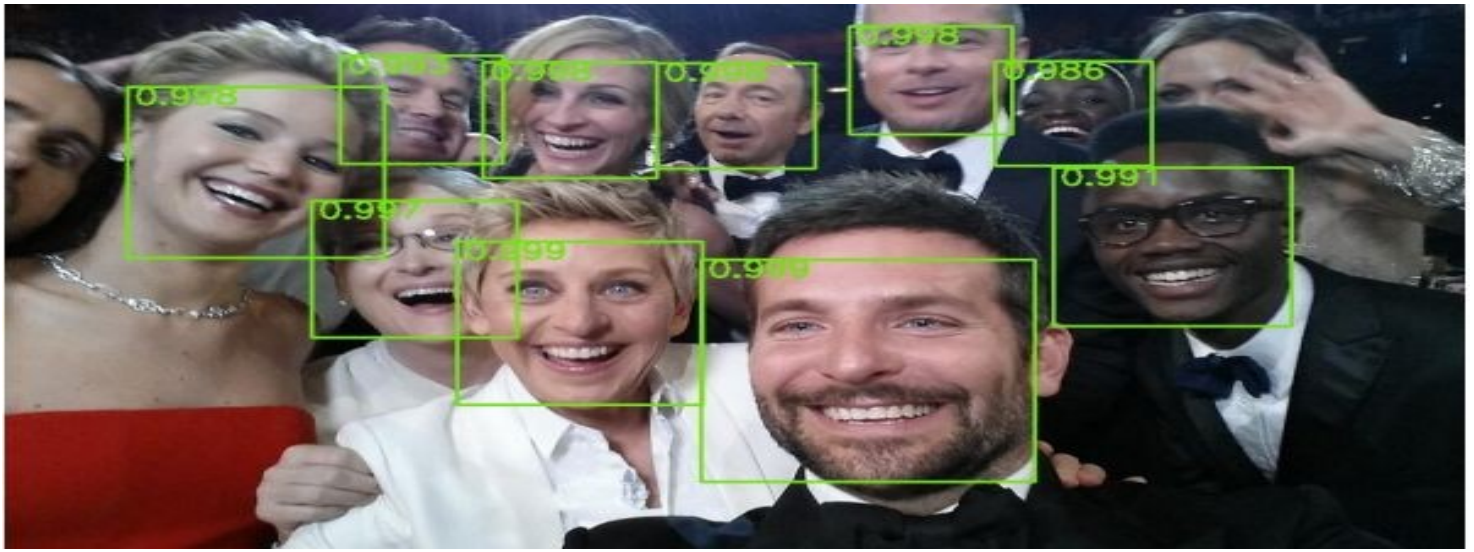
CONTENTS

Abstract

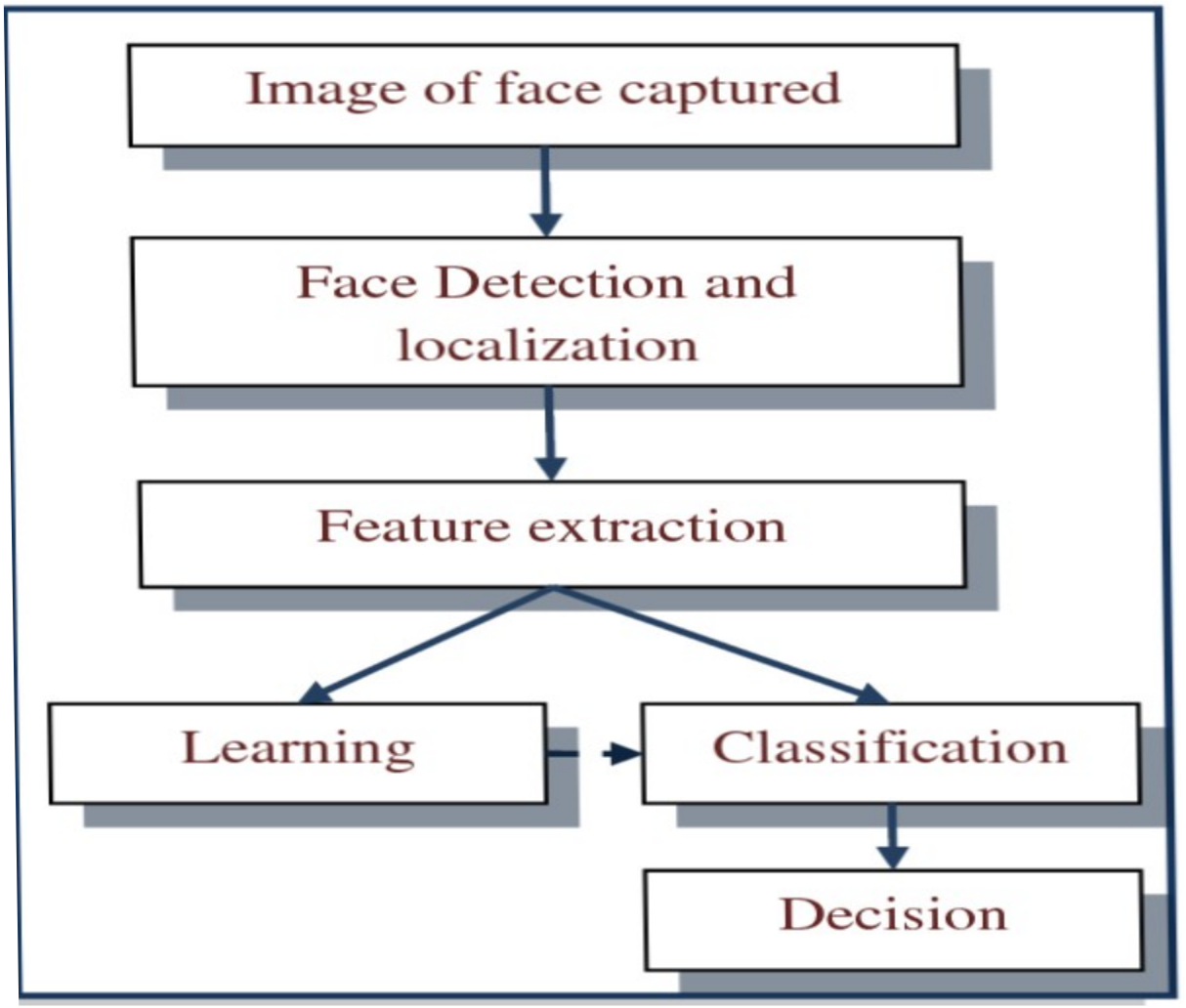
- The idea behind this techinque involves using a cascade of classifier to detect different features in an image.
- We have proposed a system that can help in recognizing a human face in real-time.
- This can be used for various purpose and various machine and smart devices.

Introduction

- Face detection is a computer vision technology that helps to locate/visualize human faces in digital images.
- With this technology, face detection has gained alot of importance especially in fields like photography, security, and marketing.



Model Architecture



Innovation Idea of Project

- It can Detect faces easily with less time of execution.
- It can Detect Face in any quality of Images even blur.
- It can Detect single, double or even multiple faces in any Image.
- It can tell the number of Peoples/faces in Image.
- It is fully automatic face recognition system.
- It use Haar feature based Algorithm to detect which it makes very accurate and fast processing of face detection

Face Recognition

- Face Recognition is a technology in computer vision. In Face recognition / detection we locate and visualize the human faces in any digital image.
- A typical example of face detection occurs when we take photographs through our smartphones, and it instantly detects faces in the picture.

OpenCV-Python

- Opencv essentially stands for open source computer vision library
- In this project, we will use opencv to perform face recognition in python.
- Detect human faces in images with opencv in python
- Perform real-time face detection in a live stream from a webcam and using images
- Recognize and identify faces in images

Installation:

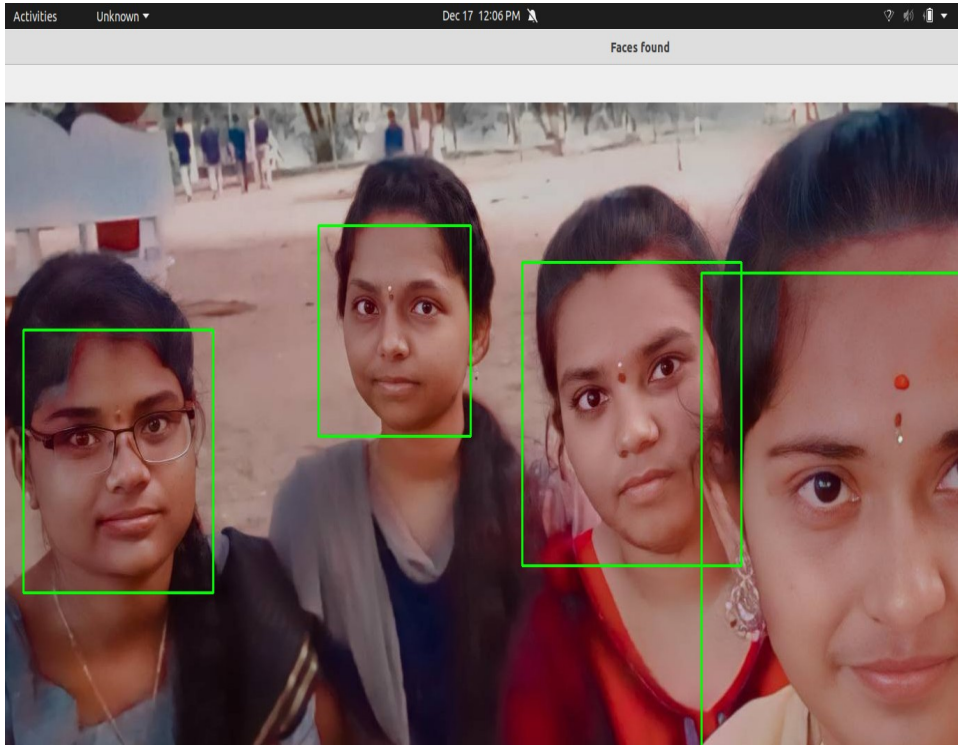
- OpenCV-Python supports all the leading platforms like Mac OS, Linux, and Windows. It can be installed in either of the following ways:
- Packages for standard desktop environments (Windows, macOS, almost any GNU/Linux distribution)
  - **run pip install opencv-python** if you need only main modules
  - **run pip install opencv-contrib-python** if you need both main and contrib modules

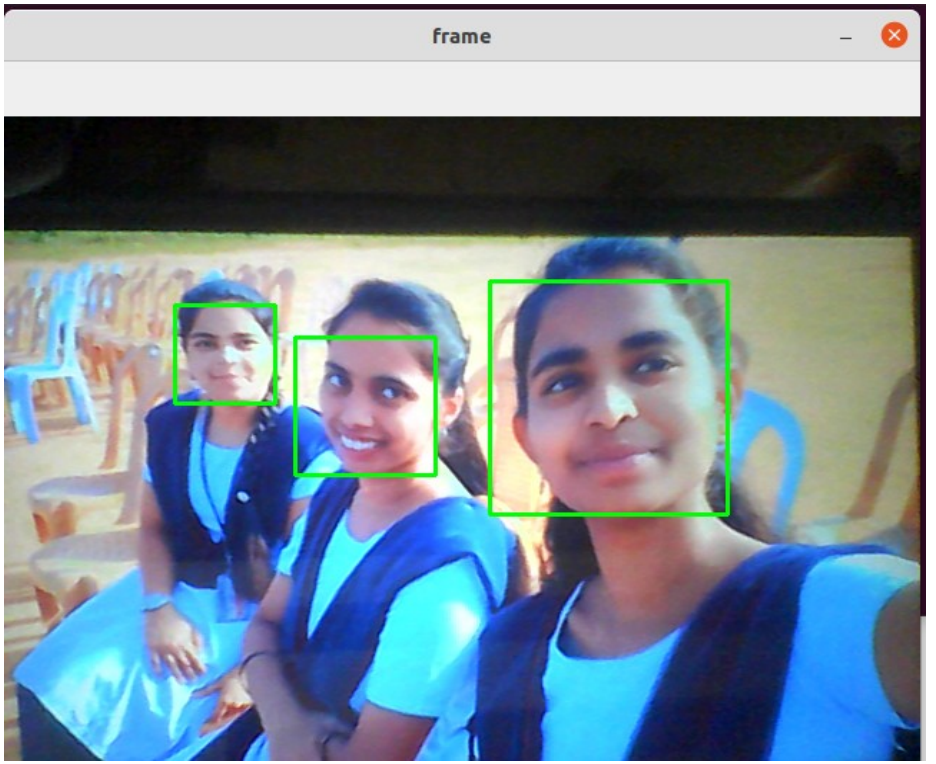
Haar feature based cascade classifier

- It is a machine learning algorithm where we train a cascade function with tons of images. These images are in two categories:
- positive images containing the target object
- negative images not containing the target object

- The haar cascade classifier that is built into opencv has already been trained on a large dataset of human faces, so no further training is required.
- We just need to load the classifier from the library and use it to perform face detection on an input image
- This algorithm should track your face and create a green bounding box around it regardless of where you move within the frame.

Sample outputs





Applications of facial recognition:

- Automobile security
- Access control
- Immigration
- Education
- Retail

Conclusion

- By this we conclude that by using python and OpenCV to perform face recognition. To build our face recognition system, we'll first perform
- face detection,
- extract face embeddings from each face using deep learning,
- train a face recognition model
- and then finally recognize faces in both images and video streams with OpenCV..

THANK YOU