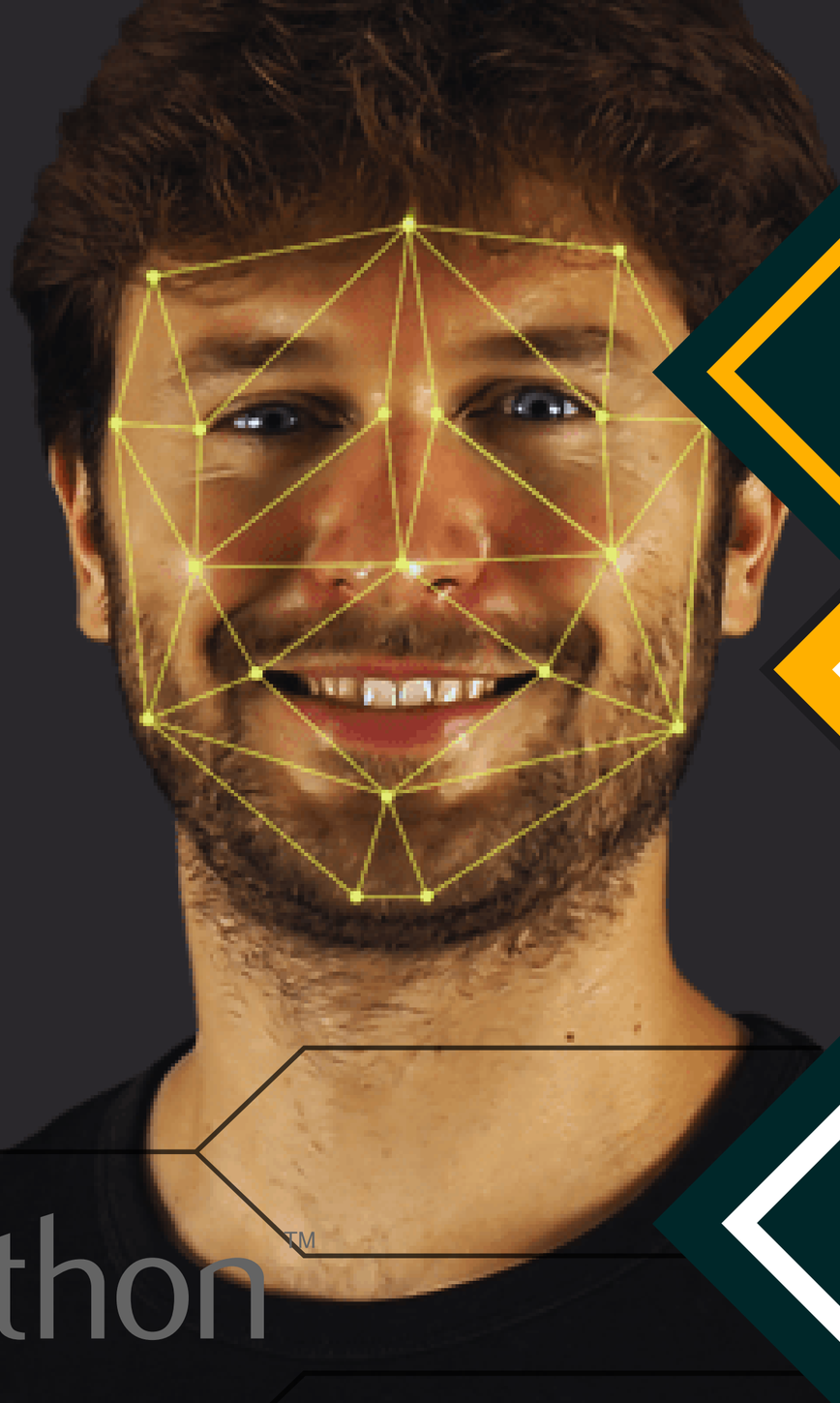
Face Recognition



python™

ON BCS 216 –B

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Introduction

Insights :

The system is based on security that combines the functions of smart phone and home network system. It enables the users to monitor visitors in real-time, remotely via the IoT based doorbell installed near the entrance door to a house.

Face Recognition is a technology in computer vision. In Face recognition / detection we locate and visualize the human faces in any digital image.

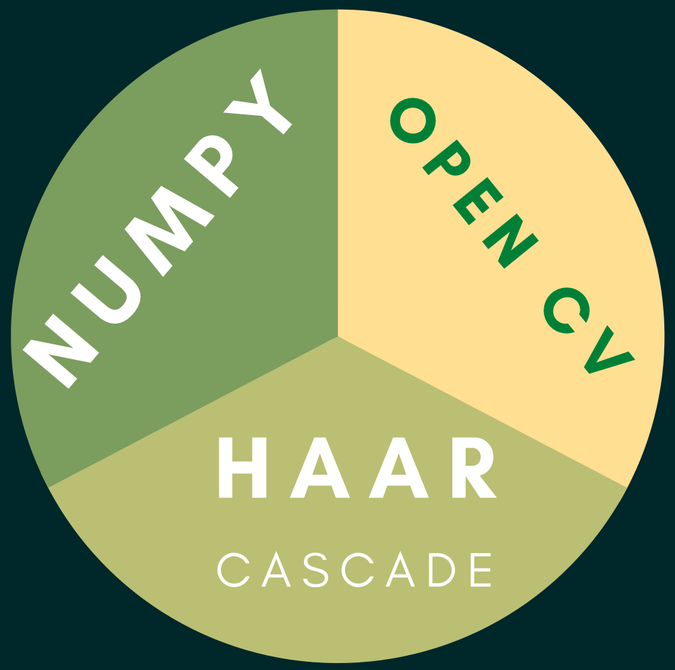
It is a subdomain of Object Detection, where we try to observe the instance of semantic objects.

These objects are of particular class such as animals, cars, humans, etc.

Detection technology has importance in many fields like marketing and security.

This system makes security as further autonomous by capturing the images automatically and processing the image for facial matching and uses mail communication to the server to confirm the intruder is known or unknown.

Methodology :



01 Open CV :

Open Source Computer Vision Library is an open-source computer vision and machine learning software library which is built to provide a common infrastructure for machine learning algorithms and computer vision.

It has thousands of optimized algorithms which can be used different purposes like detecting and recognizing faces, identifying objects and many more. We need it to take pictures using our webcam and some manipulation needed to be done in the image.

Methodology

02 Num Py

NumPy is the fundamental package for scientific computing in Python which provides a multidimensional array object other mathematical operations can be performed using this but simply speaking we just need it to convert our images into some form of an array so that we can store the model that has been trained.

03 Haar Cascade

Haar Cascade is basically a classifier which is used to detect the objects for which it has been trained for, from the source. The result is an XML file which stores the trained result. If said simply the Haar Cascade is trained by superimposing the positive image over a set of negative images.

The training requires a high spec system and a good internet connection and thousands of training images that is why it is carried out in the server. For increasing the efficiency of the results they use high-quality images and increase the number of stages for which the classifier is trained. We need Haar cascade frontal face recognizer to detect the face from our webcam.

OBJECTIVES :

Objective 1 :

Explore Different Libraries in Python.
Get the insights about new techonoloy.
How to recognise face and using numpy, open cv categorise different attributes of face.
Our approach is to build a model that would sense data via camera or upload data like images or videos.

Objective 2 :

After achieving objective 1
We would be working on building an effective code that would be able to identify and using these libraries and mathematical function we would try to increase the accuracy of our Model

Objective 3 :

After achieving our objective 2 :
We would try and explore our model on different people.
We would try to measure the accuracy and fix the issues if any.
Building a model that would sense data via camera or upload data like iimages or videos.
It would also specify the name of the person and compare it with other around him/her.
Once our model is developed it would give signal to door lock input as true or false, if the person is identified or not.

FUTURE

Face Recognition is a way where we make a machine learn and recognize things and humans
with you of programing and mathematical functions. Our aim is to develop a device in future
that would be able to be installed in homes of people and they would be able to safeguard
their things with this device/software.

SCOPE

An example is a system to identify known troublemakers in a mall or a supermarket to
provide the owner a warning to keep him alert or for automatic attendance taking in a class.

WE would try to make an device which would take data from the IOT cloud and would lock or unlock the door as expected from the model

Thank You!

Do you have any questions for me before we go?