

CRIMINAL DETECTION USING FACE IDENTIFICATION

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ABSTRACT

This paper represents real-time recognition and identification utilizing a spontaneous guidance camera and separate attack. The proffered system involves 4 expressways, involving (1) training of real-time data and movie land(2) face detection utilizing Hear- Cascade classifier(3) comparison and matching of trained images with live images from the camera(4) identification predicated on the comparison. A gut operation of interest is automated guidance, where the end is to allow people from the guard list. The purpose of this paper is to match an image with several formerly trained. This system represents a fashion for face detection exactly in real-time fiefdom. Hear Cascade is one of the showy open-source platforms for face detection. also, the system uses Hear classifiers to trace countenances in images utilizing the OpenCV platform. The delicacy of face recognition is significantly high. The system can expertly fête one special face, useful for the quick quest of assumed persons because the computation time is remarkably low. In India, we have a true system for special citizen recognition called Aadhaar. still, it can disassociate between individualizes and keep a story of the lawbreakers in a special region and append their individualizes to the lawless system guard list, If the system makes use of this as a citizenship database.

Still, the use of face discovery and recognition technology also raises ethical and sequestration enterprises, as it can potentially be exercised to track individualities without their concurrence or to distinguish against certain groups. It's thus important to exercise these tools responsibly and transparently and to insure that applicable screens are in a position to cover individual birthrights and freedoms.

Keyword: *IOT, Raspberry Pi, Python, Open CV, Surveillance Camera, Haar Cascade, Face Recognition, Image Masking.*

1.INTRODUCTION

Face recognition is a combination of machine literacy algorithms and thus holds the rates of not only extreme perfection but also trustability. For automatic discovery of the face from the databases this fashion is extremely helpful. In recent times Open CV (Open Source Computer Vision Library) has been extensively employed in different sectors of operations like a surveillance camera, robotics, image pre-processing, identification, etc. This technology is employed for the prisoner, pre-processing, authentication, validation, authorization, and identification. In advanced countries, the government creates a dataset of citizens which is also used to compare suspected faces with trained data stored in a database. Face identification is defined in three ways- face discovery, point birth, and face recognition after comparing the features. Camera configuration is extremely important to trace moving persons and fête them precisely.

Facial points render pivotal information about face shape. The precise position of features and facial points tracing are important. Each point is generally detected and traced by performing an area look for the advanced matching position. There are veritably many inquiries on face recognition using edge-grounded facial features

discovery. The sides not only carry precious data about the face but also are simple to reuse and hence calculation power and the time needed is drastically reduced. The Viola-Jones system provides a classifier by opting for a couple of significant features using Ada Boost. Viola Jones system successfully combines further compound classifiers in the Haar waterfall structure which exponentially increases the speed of the sensor in the favorable features of the face. Software out there that acts analogous services related to the face recognition system does live, still, this system also has its graces and distinctions which can contribute to the society.

2.METHODOLGY

This paper goes on to develop a birth and recognition system that can recycle images instantly while acquiring unexpectedly high true positive face identification rates. Viewing fabrics are tried cornerwise over different standard face databases, with and without noise and other practical goods. The results of visual perception fabrics uncover that well-employed face recognition indeed from inferior film land and shows astounding prosecution productivity, examiner possible pitfalls, and help/ examine felonious conditioning addition to face and stir discovery is generally an important requirement. Facial point birth and Recognition for Felonious Identification is particularly about maintaining a secure terrain. OpenCV (open-source computer vision) is the vital software that is being used in this fashion. For face discovery, the system uses Haar Cascade and Linear SVM. The foremost proposed system during this work is, if an existent comes from the standpoint of the camera, first it will look for implicit matches that we have formerly stored in the trained database. If the module finds a match also it fires an alarm in the form of a buzzer/ TV display and a dispatch alert is transferred to the director at headquarters.

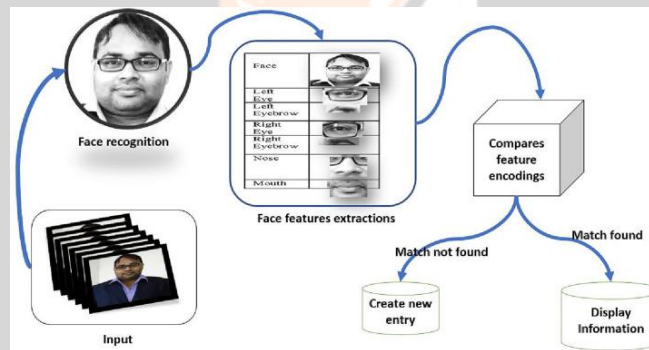


Fig -1: Architecture of System

3.SYSTEM IMPLEMENTATION

Training the system: To identify the criminals, it is necessary to train the system with their images so the system will have a dataset of the facial features of each criminal for comparison. The process is shown below. Each criminal will have his ID assigned.

Setup: The system will be integrated into a Jeer Pi and will bear a stable authority force to operate. It'll also need an internet connection conceivably via LAN or Wi-Fi anchorages to be suitable to shoot an announcement to the director. In the advanced system, a 42MP camera with a good viscosity of pixels will be set up at a position where people will enter through a gate or a fragile admittance for illustration, the entry door of a personality's house from where culprits might enter. This camera will be connected via HDMI string to the Jeer Pi system. An IR detector will be exercised on the jeer Pi which will descry stir. Only if a stir is detected, does it turn on the camera, hence saving a lot of authority, also the camera will capture an image only if a person's face is detected in the frame and

will hence save data size and reduce gratuitous processing. This identification of whether a person's face is present-day or out in the frame of the camera will be done utilizing the OpenCV frame

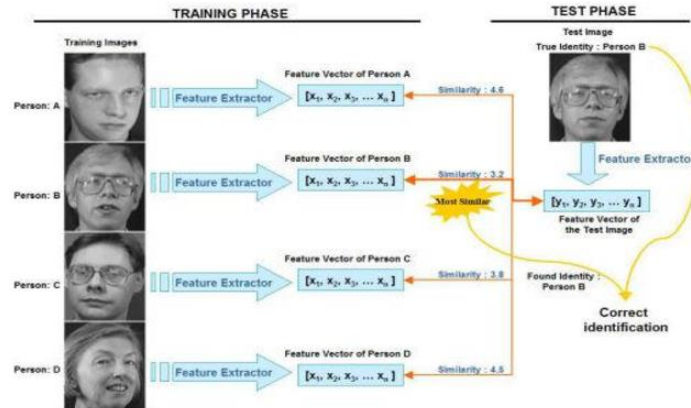


Fig -2: Training of Algorithm

Opencv: OpenCV identifies mortal countenances utilizing facial features like eyes and face features present-day in the obtained image. It provides a platform and access to libraries that give pre-trained algorithms to identify mortal countenances. This saves a lot of time that's demanded for training and testing to support the algorithm separate between mortal countenances and other shapes present-day in images. This is done with the help of the face waterfall classifier and eye waterfall classifier.

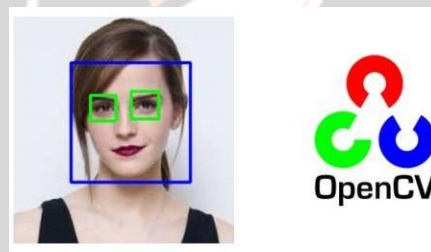


Fig -3: Human Face in OpenCV

Pre-processing: When the system is set up, whenever a person's face is obtained, it'spre-processed. This involves converting the RGB image to a slate scale. This is done because the Haar waterfall algorithm only works with black and undyed pixels and has the appended asset of reducing image size and further processing authority needed. also, the image is cropped to carry only the face of the person. This also saves on image size. also, the image is transferred for the Haar waterfall discovery.

Application of algorithm: There are 2 manners of pixels in the image, i.e., black or undyed. The face is full of these amalgamations of pixels. For illustration, the eyebrows are usually described by black pixels and hence will produce such a matrix. The boundaries of the face will be outlined by the bite features girding the face and as each face shape is special, it will produce another special combination of pixels in matrix shape. also, millions of special amalgamations of the matrix will be created utilizing nose, observance, eyes, cheeks, lips, etc predicated on their shape and size. thus, these stored features can now be assimilated with trained dataset images of lawbreakers. Due to the high number of practicable amalgamations of features for each person, miscalling is delicate and delicacy is high. This is because multitudinous stages of point birth are executed, where in the initial stages a thick image is considered, and as depth is swelled, the complication rises and consequently do the pixel amalgamations. If the image captured in real-time is matched with a given miscreant also an alert will be transferred from the system to the director via the internet. The admin also gets the real-time captured image along with felonious details so

applicable action can be taken. Also, the TV will display a communication that the person is felonious, and hence-point police will be advised. In case the face isn't a match, the TV displays such a communication and the system moves on to the coming image Only the director can add or remove new culprits to the system. This can be done by penetrating the system, training it with the new miscreant's images, and also storing them in storehouse of Raspberry Pi.

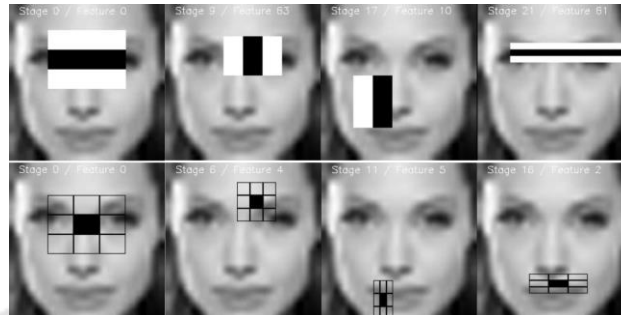


Fig -4: Haar Cascade Features and Matrix Storage

4.RESULT

The system is able of furnishing immediate affair and handed there's stable internet connection and power force, the complete felonious identification process takes place within 1 alternate with a 96 delicacy. This can be further increased by furnishing a advanced number of training data set images to the system and a dicker between the processing time and delicacy takes place. So, the admin can according to his requirements, decide the relation between delicacy and time detention.

5.CONCLUSION

This paper has introduced the face recognition supported Facial features system and Machine Learning algorithms bedded in Open CV and Python Language. Albeit the stored bunch of images of the person within the database differ from the input image, the system may be a useful system of relating the individual faces and so quest down the difference between real time image and stored images the system takes and calculates main features from the important time image. Thus, some minor changes within the image to be honored are frequently allowed. Great recognition delicacy and better discriminative power, lower computational cost because lower images with only main features bear least processing to educate the Algorithm. The crucial advantage is that system uses citizenship database which formerly exists. therefore, it's a doable and effective system of identification of culprits in a secure position.

6.REFERENCES

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