

# FACE DETECTION AND MOOD RECOGNITION MUSIC PLAYER

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**Abstract** - Image processing is a growing field and one of its applications is Face recognition which is gaining attention of many industries due to its wide range of applications. This Project explore the ways effectiveness of facial recognition can be increased. This system is based on OpenCV and we also used Python to develop the project. The system uses HAARCASCADE Face Database as reference for comparing. Face location is a developing innovation being utilized as a part of an extensive variety of distinguishes human faces which are in computerized pictures. Face discovery additionally implies a human ability to recognize diverse appearances. Face identification can be named as protest class recognition. Protest class recognition, the errand is to discover the areas and sizes of all items in a computerized picture that have a place with a particular class. Algorithms focus on frontal face of human for detection. If image matches with the image stores in database, result is shown accordingly. Changing the database results in change of the results of previous inputs.

## I. FACE MOOD DETECTION USING HAARCASCADE

Haar feature-based cascade classifiers are an effective object detection method. This method uses machine learning by repeating and storing different faces as case study and creating a database for future experiments.

Calculation requires bunches of computerized (pictures of appearances) to prepare the classifier. At that point we have to separate the highlights out of it. These resemble programming a bit. Each component is an aftereffect of subtracting aggregate of pixels under white rectangle from entirety of pixels under dark rectangle and put away as a solitary piece esteem.

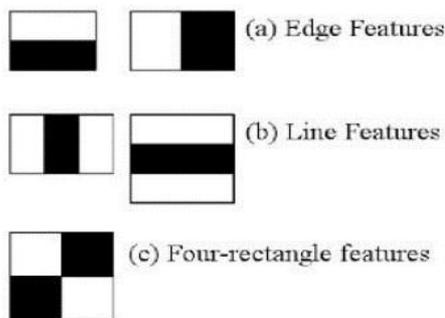


Fig1:HaarFeatures

Every possible sizes and locations of each kernel are used to calculate plenty of features. Even a normal window results over thousands of features. For each calculation of feature, we need to find pixels under white + pixels under black. For calculation to be easy new method of integral image is introduced, which can obtain operations to just four pixels.

They chose highlights center around the district of the eyes which is frequently darker than the other area of the nose and cheeks. The second component that is

the eyes are darker than the scaffold of the nose. In any case, similar windows are not appropriate on cheeks or some other place. With a specific end goal to choose an appropriate element relies upon the different variables like edge of the picture taken, light force and preparing pace of the equipment.

To counter this, we at that point apply every last element on all the preparation pictures. For each element, it finds the best coordinated which will characterize the countenances to positive and negative pictures. Be that as it may, there will be blunders or misidentifications. Thus, it tries to choose the highlights with conceivable least mistake rate, i.e. best characterizes just the face and recognizes it from non-confront pictures. (The procedure isn't straightforward. Each picture is given an equivalent weight. After every recognizable proof, weights of misclassified pictures are expanded. Again a similar procedure is done to compute new mistake rates and new weights too. This procedure is rehashed until the point when required precision is achieved).

The last classifier is a weighted total of the feeble classifiers. It is called frail since only it can't characterize the picture, yet together with others frames a solid classifier. In a picture, the vast majority of the picture locale is non-confront district. So it is a superior plan to have a basic technique to check if a window isn't a face locale. On the off chance that it isn't, dispose of it in a solitary shot. Try not to process it once more. Rather center around area where there can be a face. Along these lines, we can discover more opportunity to check a conceivable face locale.

## II.FACE DETECTION APPROACHES

The main face detection methods are listed below:

1) **Research of faces:** characterizing different countenances, their properties. However, this approach prompts trouble in making an interpretation

of human information into very much characterized calculation.

**2) Highlighted based strategies:** static highlights of countenances are utilized for identifying surface, skin shading, and so forth. In any case, highlights from such calculation can degenerate because of light and clamor.

**3) Format coordinating:** Input picture is contrasted and predefined confront layout. In any case, the precision here fluctuates because of varieties in scale, stance and shape.

**4) Appearance-based technique:** the formats in appearance based strategies are prepared from cases in pictures. With examination and machine learning procedures can be utilized to locate the pertinent qualities of face and recognize the non-confront pictures.

### III. FACE RECOGNITION APPROACHES

LFA technique for acknowledgment examines the face regarding neighborhood highlights, e.g. eyes, nose, and so forth alluded to as LFA pieces. LFA procedure offers better strength against neighborhood minor departure from the facial picture in completing a match, however does not represent worldwide facial properties. Neural Network are utilized for learning of the countenances in a mentor set by the machine in the 'preparation eliminate and conveying acknowledgment in the speculation stage. In any case, to prevail in a functional set-up, the cases should adequately extensive in number to represent varieties, all things considered, circumstances. Display Matching strategies for confront acknowledgment (like Hidden Markov Model (HMM)) prepare a model for each individual amid show learning and pick the best coordinating model, given an inquiry picture. An acknowledgment framework in view of inadequate portrayal figured by minimization works with the essential thought of giving the acknowledgment a role as a meager portrayal issue. The fundamental worry in this approach is the nearness of adequately vast number of highlights and right calculation of meager portrayal. It is a hearty and adaptable calculations for confront acknowledgment in light of straight or arched programming.

The perception of frontal human faces is anchored by Face-detection algorithms. It is homologous to image detection in which the image of a person is accorded bit by bit. Image compares with the sample images stored in database. Any facial attribute changes in the database will invalidate the matching process.

Face detection is a computer technology being used in a variety of applications that identifies human faces in digital images.

#### Facial recognition

Face acknowledgment is utilized as a part of biometric confirmation, regularly as a piece of (or together) with a facial acknowledgment framework. It

is additionally utilized as a part of video observation, human PC interface and picture database administration.

#### Photography

Latest computerized cameras utilize facial acknowledgment for self-adjust. Face identification is additionally helpful for choosing areas of enthusiasm for photograph slideshows and after that utilization a skilful and-scale Ken Burns impact. Current apparatuses additionally utilize grin recognition to take a photo at a suitable minute.

#### Marketing

Face recognition is picking up the enthusiasm of advertisers. A webcam can be coordinated into a TV screen and distinguish any face that crosses through. The framework at that point utilize the caught picture to ascertain the race, sexual orientation, and age scope of the face. Once the data is assembled, a progression of commercials can be made that is focusing on particular recognized race/sex/age.

**Optim Eyes, a case of such framework is incorporated into the Amscreen advanced signage framework. AdMobilize, a Miami Beach based firm made the latest advancement in this field. Their AdBeacon, turned into world's first attachment and measure continuous investigation gadget, enabling any retailer to access a similar facial identification innovation utilized by substantial sponsors in alternate parts of world. They've additionally authored the term pay-per-confront.**

### IV. TESTING

Facial detection result

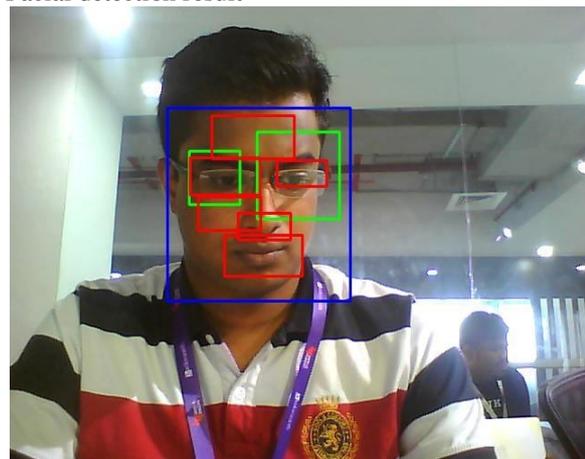


Fig 2: Various Face Features

In fig 2, the boxes in different colours represents detection and tracks various face features like the blue box detects the face, green box detects eyes and other facial features.

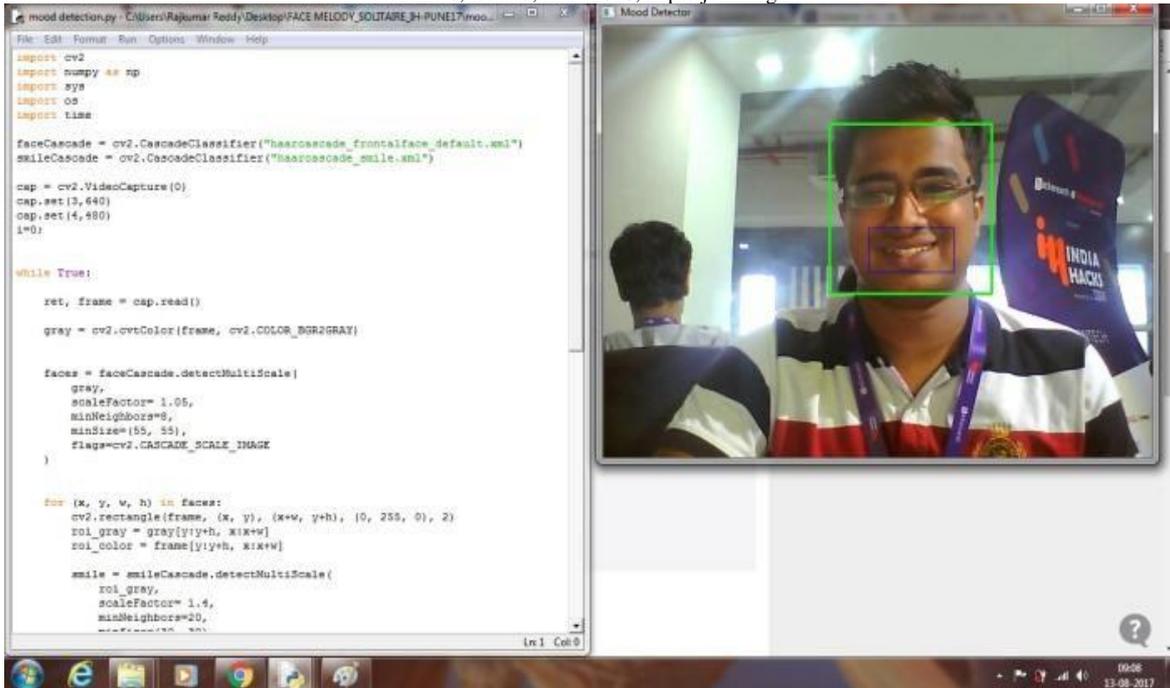


Fig 3: Smile Detection

In fig 3, Face has been detected (in green box) and when a person smiles, it gets detected (in blue box) which then instructs the music player to play a happy music automatically without any haptic feedback.

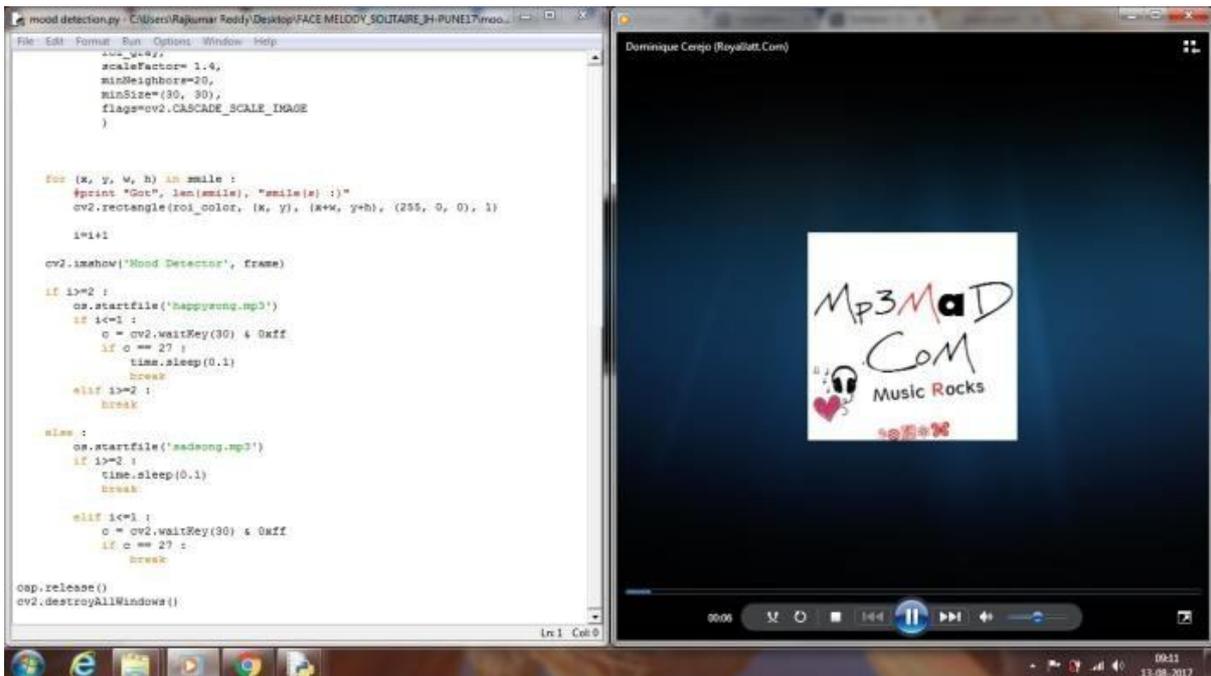


Fig 4: Music Player

## REFERENCES

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