MUSIC RECOMMENDER USING FACIAL EXPRESSION

A Project Work

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ABSTRACT

Human emotion play a vital role in recent times. Emotion is based on human feelings which can be both expressed or not. Emotion expresses the human's individual behaviour which can be in different forms. Extraction of the emotion states humans individual state of behaviour. The objective of this project is to extract feature from human face and detect emotion, and to play music according to the emotion detected. However, many existing techniques use previous data to suggest music and the other algorithms used are normally slow, usually they are less accurate and it even require additional hardware like EEG or physiological sensors. Facial expressions are captured a local capturing device or an inbuilt camera. Here we use algorithm for the recognition of the feature from the captured image. Thus, the proposed system is based on the facial expression captured and will music will be played automatically.

Keywords— Recognition, Python, OpenCV Application.

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1. INTRODUCTION

1.1 Problem Definition

People tend to express their feelings, substantially by their facial expressions. Music has always been known to alter the mood of an existent. Landing and feting the emotion being raised by a person and displaying applicable songs matching the bone's mood and can decreasingly calm the mind of a stoner and overall end up giving a pleasing effect. The design aims to capture the emotion expressed by a person through facial expressions. A music player is designed to capture mortal emotion through the web camera interface available on calculating systems. The software captures the image of the user and also with the help of image segmentation and image processing ways excerpts features from the face of a target human being and tries to descry the emotion that the person is trying to express.

1.2 Project Overview

In this conception music is recommended to the stoner by detecting the real time capturing of stoner's feelings. Being fashion were using collaboration fashion which will use former stoner data to recommend music and This fashion requires lot of homemade work so, we proposed a system to arrange different music in different orders similar as happy, sad or angry etc. Emotion-Grounded-music- player It's music player with chrome as frontal- End which has the capability to descry feelings i.e, the face of stoner with the help of machine literacy algorithm using python. Grounded on the detected stoner's mood song list will be displayed/ recommend to the stoner. In this operation image of a person is captured using a real time machine that has the access to the original machinery and depending on the captured image it compares the database data sets that formerly saved in the original device through recycling it defines the present mood of the stoner in numerical form grounded on this music will be played other than that we've some common features that are line playlist so that we can have a individual playlist and the last bone is arbitrary it uses python Eel library so that it can pick a arbitrary song with out any order.

1.3 Hardware Specifications:

1. Processor: Intel P-IV System
2. Processor Speed: 250 MHz to 833 MHz
3. Ram: 512 Mb Ram
4. Hard Disk: 40 Gb
5. Web cam
6. Keyboard & Mouse

1.4 Software Specifications :

1. **Operating System:** Windows 2000 Professional
2. **Environment:** Visual Studio .NET 2002
3. **Language:** Python 3
4. **OpenCV**

2. LITERATURE SURVEY

2.1 Existing System :

The process of multidimensional reduction by taking the primary data that's lowered to numerous other classes for sorting out or organizing. Emotion of a stoner is uprooted by landing the image of the stoner through webcam. The captured image is enhanced by the process of dimensional reduction by tracking the primary data. These data is converted into double image format and the face is detected using Fisher Face and Harcascade styles.

The initial or the primary data taken from the mortal face that's lowered to numerous other classes. These classes are sorted and organized using the below styles. Emotion is detected by rooting the point from the mortal face. The main end in point rooting module is to dwindle the number of coffers needed from the large sets of data. Features in an image consists of 3 corridor.

1. Boundaries/ edges
2. Corners/projection points
3. Field points

2.1.1 Fisher Face Algorithm

This image processing system is used for reducing the face space confines using the top element analysis (PCA) system and also it applies fishermen direct discriminant (FDL) or the LDA system to gain the point of the image characteristics, we especially use this because it maximizes the separation between classes in the training process. this algorithm helps to reuse for image recognition is done in fisher face while for matching faces algorithm we use minimal euclidean it helps us to classify the expression that implies the emotion of the user.

2.2 Proposed System

Humans have a tendency to show their feelings intentionally substantially they reflect the face. The proposed system helps us to give an commerce between the stoner and the music system. This design substantially focuses on the stoner's favored music that's recommended due to the emotional mindfulness. In the original stage of the proposed system, we've given 3 options and each contains its functionality. To this, we've given a list of songs and feelings grounded on spatial recognition. Once the operation starts working it captures images with the webcam or any other physiological bias. our main end in this system is making a sophisticated music player that could make the stoner mood more and music is one of the stylish aid to change the mood.

Figure 2.2.1 : Different types of emotion

2.3 SYSTEM ARCHITECTURE

In this paper, In this project, by running the main web page it will trigger an XML file that then OpenCV helps in capturing images from the webcam as well as for processing purposes. made the implementation of the fisher face methodology of OpenCV for classification. And fisher face to train the model and store it in a model-file(XML). While using a player it uses for prediction for the emotion which will show you the main media player web page. In this, it contains 2 options one for emotion-based detection and the other for random selection of songs Rando picking we are a small library in python i.e, Eel.

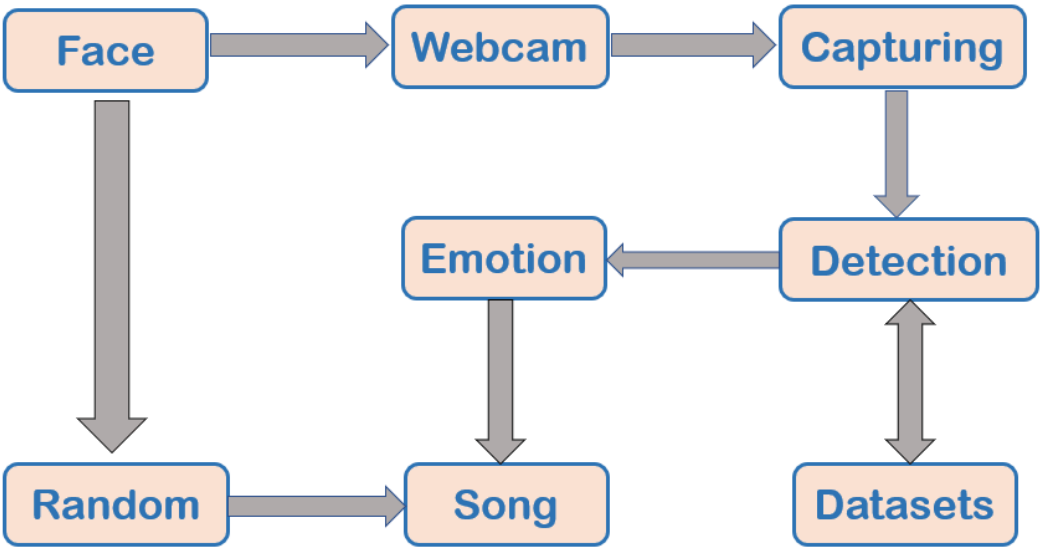

Figure 2.3.1: System Architecture

3. OBJECTIVES

The project aims to capture the emotion expressed by an individual through facial expressions. A music player is meant to capture human emotion through the online camera interface available on computing systems. The software captures the image of the user then with the assistance of image segmentation and image processing techniques extracts features from the face of a target person and tries to detect the emotion that the person is trying to precise . The project aims to lighten the mood of the user, by playing songs that match the requirements of the user by capturing the image of the user. Since the past the simplest sort of expression analysis known to humankind is countenance recognition. The simplest possible way in which people tend to research or conclude the emotion or the sensation or the thoughts that another person is trying to precise is by countenance . In some cases, mood alteration can also help in overcoming situations like depression and sadness. With the help of expression analysis, many health risks are often avoided, and also there are often steps taken that help brings the mood of a user to a far better stage

4. METHODOLOGY

[1] FACE CAPTURING :

The main ideal of this session is to capture images so then we're using the common device i.e, webcam or can use any other physiological devices. for that purpose we're using the computer vision library. This makes it easier to integrate it with other libraries which can also use Numpy and it's substantially used as a real time computer vision. In the original process when prosecution starts it starts to pierce the camera sluice and captures about 10 images for farther process and emotion detection. so, in the original phase of this design in order to capture the images and face discovery. We use an algorithm that could take the authentic images so classify the images and we're need of lot of positive images that they actually contain images with faces only on the other hand, negative images that contain the images without faces in order to train the classifier. The classified images are taken as a part of the model.

[2] FACE DETECTION :

The face recognition is considered as one of the stylish way to determine a person's mood. this image processing system is used for reducing the face space confines using the top element analysis (PCA) system and also it applies fishermen direct discriminant (FDL) or the LDA system to gain the point of the image characteristics, we especially use this because it maximizes the training process bracket in between classes. this algorithm helps to reuse for image recognition is done in fisher face while, matching faces algorithm we use minimal euclidean it helps us to classify the expression that implies the emotion of the stoner.

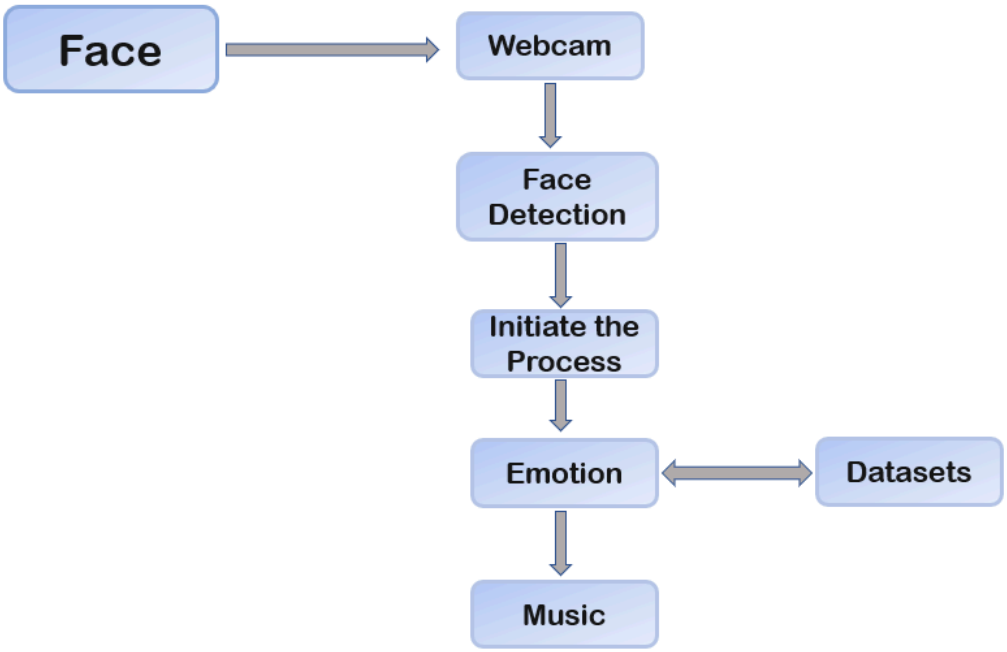

Figure 4.2: Face Detection Flowchart

[3] EMOTION CLASSIFICATION :

When the face is detected successfully, a box will appear as and it overlay the image to extract the face and for the further analysis. in the next step The images that are extracted previously will processed using the function. The code will extract the facial spatial positions from the face image and it is based on the pixel's intensity values that are indexed at each point and it uses boosting algorithm. It is performs the comparision between the input data and with stored one so it can predict the class that contain the emotion. If it contains one of the four emotions anger, sad, neutral or happy. and detection of the emotion as seems to be decreasing speed command and it will be executed so that it can reduce the speed of the wheelchair so, that we could prevent the user from endangerment.

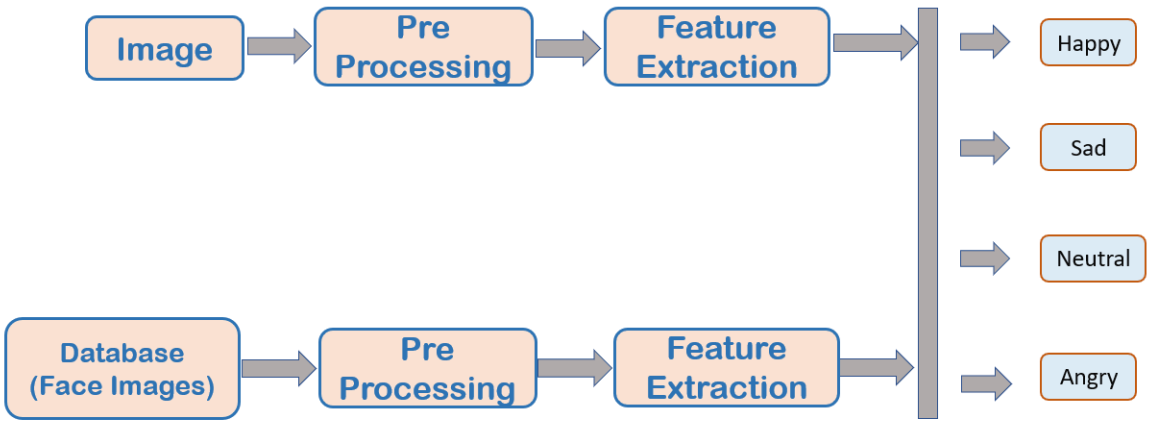

Figure 4.3: Emotion Classification Flowchart

[4] MUSIC RECOMMENDATION : (9)

The input images that's acquired is from the web camera and is used to capture real- time images. And then we're four main feelings because it's veritably hard to define all the feelings and by using limited options it can help the compendium time and the outgrowth is more sophisticated. it compares the values that are present as a threshold in the law. The values will be transferred to perform the web service. The song's will be played from the detected emotion. The feelings are assigned to every song. When the emotion is transferred the separate song and the feelings are numbered are arranged and assigned to every song. still, we can use numerous kinds of models to recommend because of their delicacy.

5. FUTURE ENHANCEMENT

The music player that we're using it can be used locally and currently everything came movable and effective to carry but it the emotion of a person can be taken by different of wearable detectors and easy to use rather than the whole homemade work it would be possible using GSR (Galvanic Skin Response) and PPG (Plethysmography Physiological sensors). that would give us enough data to prognosticate the mood of the client directly. This system with enhanced will be suitable to profit and the system with advanced features and needs to be constantly upgraded. The methodology that enhances the automatic playing of songs is done by the discovery. The facial expression's are detected with the help of programming interface that's present in the original machine. An the volition system, that's grounded on the fresh feelings which are being barred in our system.

6. CONCLUSION

In this design, music recommendation model it's grounded on the feelings that are captured in real time images of the stoner. This design is designed for the purpose of making better commerce between the music system and the stoner. because Music is helpful in changing the mood of the stoner and and for some people it's a stress reliever. Recent development it shows a wide prospective in the developing the emotion grounded music recommendation system. Therefore the present system presents Face
(expressions) grounded recognition system so that it could descry the feelings and music will be played consequently.

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