**A Literature Survey on Emotion Recognition System Using Facial Expressions**

**ABSTARCT** : Facial Expression Recognition (FER) is slowly evolving into a different working computer applications. FER offers a variety of application domains such as computer vision, image processing, human computer interaction, information security, affective computing. This paper describes various facial recognition techniques such as LBP, and their functionality is listed. The two most common methods of Facial Expression Recognition System are based on appearance and geometry based.

Human's emotions play an important role in recent times. Emotions are based on situations that can be expressed or not. Emotions express the individual's behaviour in a variety of ways. The purpose of this project is to extract a feature from a person's face and get emotions.

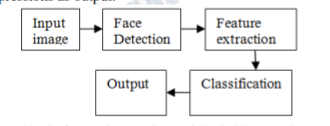
However, many existing strategies use past data to promote music, movie and other common algorithms used in general.

Slower, usually less sensitive and requires more hardware such as body sensors.

Face conditions are considered as a local photography device or a built-in camera. Here we use an algorithm to recognize a feature in a captured image. Thus, the proposed system is based on the scanned face and then detecting emotions.

This paper aims to describe the general process of how to identify different facial features and to conduct comparative studies of different processes. Also, it describes various problems in facial recognition systems and methods used to solve those problems.

1. **INTRODUCTION**: Emotion recognition is very essential to develop effective Human Computer Interaction. Human emotions are recognized by various non-verbal cues like facial expressions, gestures, body posture or speech. Among them facial expressions is easy to obtain. Facial expressions can be used to obtain 7 categories of expressions like neutral, happiness, surprise, disgust, fear, anger and surprise. The general procedure of determining facial expressions has three important steps (fig.1) . An image is given as input. The first step is the detection of face in the image in which important features are extracted and then face is identified. The second step is to extract the expression features from the image. Then extracted features are given to the classifier to identify the expressions as output.



**Fig.1. General Procedure of Face Recognition**.

1. **LITERATURE SURVEY:** The process of mass reduction by taking key data is reduced to many other classes by sorting or editing. User emotion is captured by taking a user photo with a webcam. The captured image is enhanced by a process of size reduction based on the main data. This data is converted to binary image format and faces are obtained using Fisher Face and Haarcascade methods. The first or primary data taken from a person's face is reduced to many other categories. The classes are filtered and sorted using the above methods. Emotions are acquired by removing an element from a person's face. The main purpose of extracting a feature module is to reduce the number of resources required for large data sets.

Features in an image consists of 3 parts:

* Boundaries/edges
* Corners/projection points
* Field points
* **Haarcascade Algorithm:** It is a machine learning algorithm to classify objects into categories in an image. It is mainly used for some discovery. The cascade category has different collection categories such as weak students. These Weak sections are very simple form dividers with a name called boosting. When the label goes in good condition and then go to the next stage shows the result. These have a positive side and a negative side where they identify pictures by label. These have a set of good photos rather than bad ones images in various categories. Since high-resolution images are of high value they are selected as the best quality results. Here, we use haarcascade frontal “face\_default.xml” to find an object in the image. These objects are nose, eyes, ears, lips on the face. HaarCascade designed for open cv to find front face. It's over again the ability to see features from a source. It works by training negative images over good Pictures placed over them. Good pictures contain only the images we want that we categorize Illegal images. On illegal images contain Images of everything else, which may not contain the item we are looking to see.

1. **EMOTION RECOGNITION** : Emotion recognition involves the process of acquiring the images, processing the images, detection of faces and thereby extracting the expression feature. There are three steps to e followed each time. The first step is to identify the facial region and then next step is to extract features. The last step involves classifying the emotion and providing output.
2. **FACE DETECTION**: Face detection is the process which extracts the face region from the rest of the image. Sometimes the image taken is difficult enough to identify the face clearly due to various backgrounds. Therefore it involves segmentation and extraction of facial features from uncontrolled background.
3. **PRE-PROCESSING OF AN IMAGE** : This is an important step in facial recognition. Raw images may be corrupted with noise and unwanted effects. To remove these unwanted effects the image is pre-processed. The motive of image pre-processing step is to obtain images of normalized intensity so that no unwanted effects occur.
4. **FEATURE EXTRACTION** : The process of translating the features from the input image into some set of features is termed as feature extraction. This helps us in reducing the data to small data which increases the computational efficiency. A set of points are selected which represent the characteristics of human face. The face parts like mouth corners, eyebrows are the main source of identification using pixel intensities.
5. **METHODOLOGY:**

* **FACE CAPTURING:** The main purpose of this session is to take pictures so here we are using a standard device that is, a web camera or a mobile device or any other physical devices. For that purpose we use a computer vision library. This makes it easy to do combine it with other libraries that can also use NumPy and are widely used as real-time computer view. The first process when the execution first begins to reach the camera stream and take about 10 photos to proceed process and sensitivity. So, in the first phase of this project for photography and facial recognition. We are using an algorithm that can take realistic images to separate images and we need a lot of good images containing only facial images on the other hand, negative images containing images without face . The purpose of training to distinguish. Split images are considered part of the model.
* **FACE DETECTION:** Facial recognition is considered to be one of the best ways to determine one's feelings. This image processing program is used to reduce the size of the surface space using the primary analytical method (PCA) and then using equitable discriminating fishers (FDL) or the LDA method to obtain the image mark feature, we especially use this because it enhances the separation of the training process between classes. This algorithm helps to process image recognition is done on the face of the fisherman while, aligning the face of the algorithm using Euclidean minimalism helps us to distinguish expression that expresses user feelings. Fisher's face with an open CV mainly emphasizes matric for a particular class change so they don't take it. Images that display as a topic and emotions are dominated mainly by the model that the value is analysed. The process can help us to get the user's feelings. By comparing the sets of data that each emotion compares to tens of stored images and the scale gives a precise impression so that you can play music based on the program's recommendation using the following steps and methods. Nor does it depend on other personal information such as other software available. A step dividing line in the face detection process. It helps to simplify line editing than SVM which reduces the calculation time so that the separation process takes over and makes better detection.

**A. EMOTION CLASSIFICATION:** If the face is successfully detected, a box will appear and cover the image to remove the face once further analysis.in the next step pre-released images will be processed using the function. Code will extract facial areas from the face image and is based on the pixel intensity values identified in each area and uses a development algorithm. It works to compare between input and database data one to be able to predict an emotional class. If it contains one of the four emotions anger, sadness, neutrality or I'm happy. and emotional detection as it appears to reduce the command of speed and will be made to reduce the speed of the wheelchair so that we can protect the user from danger.

**5.CONCLUSION:** The objective of this paper is to give a brief overview of Facial Expression Recognition system and to discuss various techniques adopted to implement FER system. A robust FER system, has to satisfy the performance in terms of accuracy, computational complexity, recognition rate. In addition, an FER system should satisfy pose-invariance, illumination variance.