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9940 572 462



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ijirset@gmail.com



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# Depression Level Detection through Visual Data

Saurabh Rayate<sup>1</sup>, Ramakant Vaidya<sup>2</sup>, Ganesh Rathi<sup>3</sup>, Ritesh Phade<sup>4</sup>, Sunil A Sushir<sup>5</sup>

Student, Dept. of Computer Engineering, P.E.S's Modern College of Engineering, Pune, Maharashtra, India <sup>1,2,3,4</sup>

Professor, Dept. of Computer Engineering, P.E.S's Modern College of Engineering, Pune, Maharashtra, India<sup>5</sup>

**ABSTRACT:** Aim of project is to detect depression level in the person using Machine learning and Image processing techniques. Machine Learning algorithms like CNN classifiers are applied to classify depression. Image Processing is used at the initial stage for detection, the person's video is recorded by the camera which serves as input. Psychological health of a person proves a vital role in their overall daily life performance. Problems such as stress, anxiety, depression can occur by ignoring psychological health. These problems need to be detected and controlled at the initial stages itself for better mental health. A system has been proposed here which captures frontal face videos, extracts the facial features from each frame and analyses these facial features to detect signs of depression in them. The proposed system is trained with the help of frontal face images of happy, contempt and disgust faces. The presence of these features in the video frames will be analysed to predict depression level.

**KEYWORDS:** CNN Classifiers, Image Processing, Person Face(input), Viola Jones

## I. INTRODUCTION

Depression plays a vital role in human beings lives and can lead to serious problem which may result in death/suicide, So detection of depression at initial stage is foremost. So here we are with a sumptuous idea of depression detection using visual data. Examine visual data to auto detect levels of depression by using Viola Jones face detection algorithm and CNN. To improve clinical accuracy and detection of depression. These problems need to be detected and controlled at the initial stages itself for the better mental health of the person

## II. LITERATURE SURVEY

**Table -1:** Literature Review

| Paper                                                                                                                                                              | Remark                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [1]"Automatic Assessment of Depression Based on Visual Cues: A systematic Review", IEEE transactions on affective computing, vol. 10, no. 4, october-december 2019 | In the paper, exhaustive review of available evidence highlights the considerable potential in the application of video-based methods for the assessment and monitoring of the course of depression.        |
| [2]"Detecting Depression from Facial Actions and Vocal Prosody" IEEE 2010.                                                                                         | The current findings of the paper strongly suggest that affective behavior can be measured automatically and can contribute to clinical evaluation.                                                         |
| [3]Stress Detection in IT Professionals by Image Processing and Machine Learning" IJRESM 2020.                                                                     | In the paper the video input is converted into frames and for each frame the face is detected, cropped and saved to create a dataset of test faces. and thus by checking the negativity detects depression. |

### III.SYSTEM ARCHITECTURE

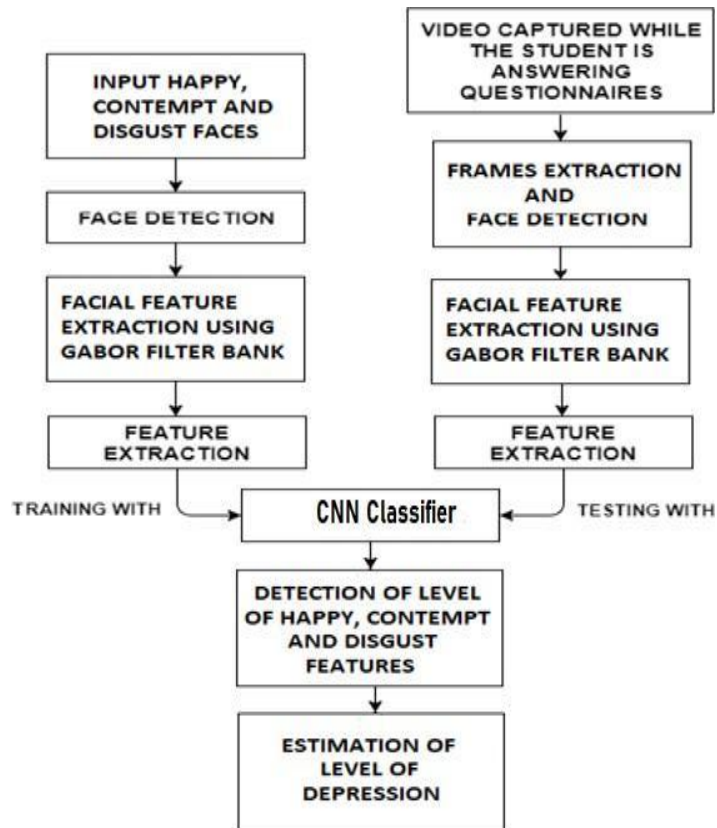


FIG -1: SYSTEM ARCHITECTURE

System architecture is mainly divided into two phases training and testing, in training phase. First in training phase we take real-time input of user face as happy, contempt and disgust face. Facial feature are extracted using gabor filter bank. In testing phase video will be captured of user while user answers some questions. Facial feature are extracted using gabor filter bank and then it will be given to CNN Classifier and CNN Classifier will predict depression level of user.

#### IV.RESULTS

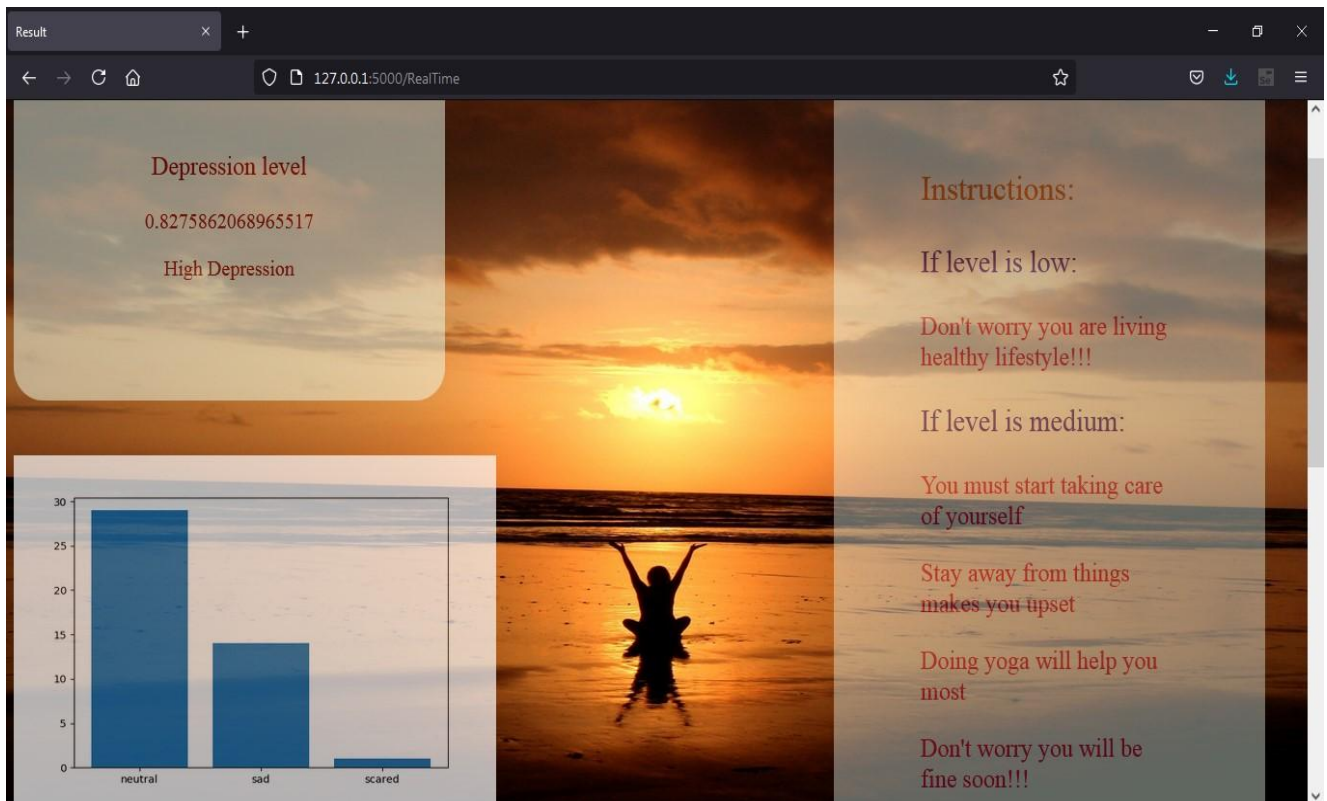


Fig -2: Result

Fig-2 displays depression level and type of depression i.e. low, Medium, High of user and based on the type instructions are displayed

#### V.CONCLUSION

A system for depression level detection has been implemented. System is designed to predict depression levels. A dataset of happy faces is created by collecting the happy faces from the fer2013 database. Face detection for each face is done using Viola Jones face detection algorithm. Then the facial features for each face are found out using a Gabor filter bank of 40 filters. The feature vector for each image is formed concatenated to form a feature-set for training. And in the end we got a system which predicts whether a person is depressed or not with the level of depression.

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- [3]Dr. D. Venkataraman and Namboodiri Sandhya Parameswaran ,"Extraction of Facial Features for Depression Detection among Students ", IJPAM 2018. [4]Ankita Patil, Rucha Mangalekar, Nikita Kupawdekar , Viraj Chavan, Sanket Patil, Ajinkya Yadav,"Stress Detection in IT Professionals by Image Processing and Machine Learning" IJRESM 2020.



### BIOGRAPHY



**Saurabh Rayate**

Student at Dept. of Computer Engineering, P.E.S. Modern College of Engineering, Pune, Maharashtra, India



**Ramakant Vaidya**

Student at Dept. of Computer Engineering, P.E.S. Modern College of Engineering, Pune, Maharashtra, India



**Ganesh Rathi**

Student at Dept. of Computer Engineering, P.E.S. Modern College of Engineering, Pune, Maharashtra, India



**Ritesh Phade**

Student at Dept. of Computer Engineering, P.E.S. Modern College of Engineering, Pune, Maharashtra, India



**Sunil A. Sushir**

Professor at Dept. of Computer Engineering, P.E.S. Modern College of Engineering, Pune, Maharashtra, India



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