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DEMONSTRATION OF FACIAL EMOTION RECOGNITION ON REAL TIME VIDEO

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ABSTRACT: The Demonstration of facial emotion recognition on real time videos is a Machine Learning Application which is used to detect the emotion on the face of the user during a real time video. It is also used for detecting the emotion in any image of user. Whenever a user uses this facial emotion detection then he could able to know about the rate of emotion he has on his face.

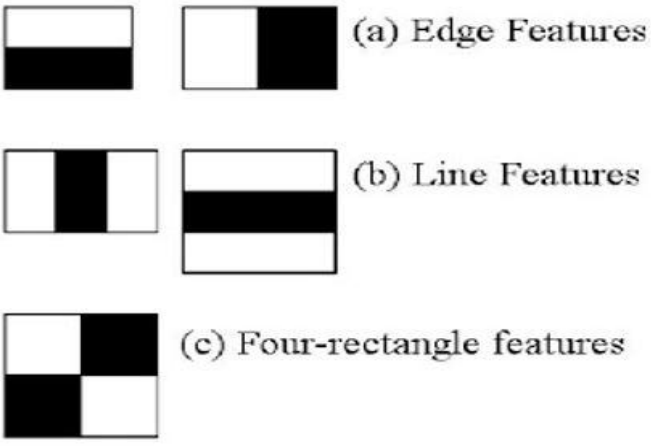
Keyword's: facial emotion, recognition, emotions

I. INTRODUCTION:

An face emotion recognition system comprises of two step processes .i.e. face detection(bounded face) in image followed by emotion detection only detected bounded face. The following two techniques are used for respective mention task in face recognition system. 1. Haar feature based cascade classifier 2.Xception CNN model (mini-xception, 2017)

Haar feature based cascade classifier:

These are used for face detection, which is just like convolutional kernel. Each feature is a single value obtained by subtracting sum of pixels under white rectangle from sum of pixels under black rectangle.



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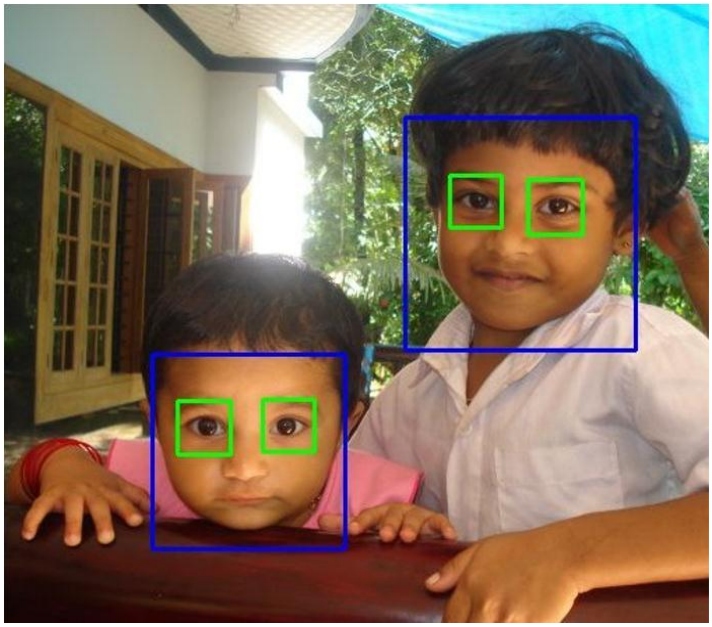

Xception CNN Model:

Xception is a deep convolutional neural network architecture that involves Depthwise Separable Convolutions. Xception is a deep convolutional neural network architecture that involves Depthwise Separable Convolutions. Depthwise convolution, i.e. a spatial convolution performed independently over each channel of an input. Pointwise convolution, i.e. a 1x1 convolution, projecting the channels output by the depthwise convolution onto a new channel space.

II. SCOPE AND OBJECTIVE:

Theprojectmainlyaimstocomeupwithasolutiontothefaciale xpressionrecognitionproblembySub Problems dividing it into sub-problems of classifications of some specific Action Units. The projects scopeincludesnotonlythetwoclassproblemswhichtellabout whetheranActionUnitisonoroff, but also the multi-class problems that will inform the user about multi occurrences of more than one Action Unit at the same time. For this, different methodologies and techniques for feature extraction, normalization, selection and classification. Solutions to these problems as well as

taking the computational complexity and timing issues into consideration. The project objective is to implement face recognition in an optimum way in terms of run time onto the embedded system. Various algorithms and methodologies are studied and hardware resources planning will be done to achieve the goal. This kind of face recognition embedded system can be widely used in our daily life in different sectors. We hope that human life can be greatly helped with this technology.

III. EXISTING SYSTEM:

- In todays life we are seeing people are using a lot of applications for the development and editing of photos and videos.
- There are many applications which gives the exact images and videos of the user.
- But there is no application which shows the rate of the facial emotion on a real time videos

IV. PYTHON

Python is an interpreted, high-level, general-purpose programming language. Created by Guido van Rossum and first released in 1991, Python's design philosophy emphasizes code readability with its notable use of significant whitespace.

V. PROPOSED SYSTEM:

- The facial emotion detection application is a application which is used to detect the emotion on the face of the user. Which not only detects but also provides the probability of the rate of emotion on the face of the user.
- This application will be not only used for real time videos but also for the images also.
- This facial emotion detection application also provides better clarity and quality as it also has to give the rate of emotion.

VI. OPENCV:

OpenCV is a library of programming functions mainly aimed at real-time computer vision. Originally developed by Intel, it was later supported by Willow Garage then Itseez. The library is cross-platform and free for use under the open-source BSD license.

VII.TENSORFLOW:

TensorFlow is a free and open-source software library for dataflow and differentiable programming across a range of tasks. It is a symbolic math library, and is also used for machine learning applications such as neural networks

VIII.RESULT :

When the system detects user it will display the emotions based on percentage.

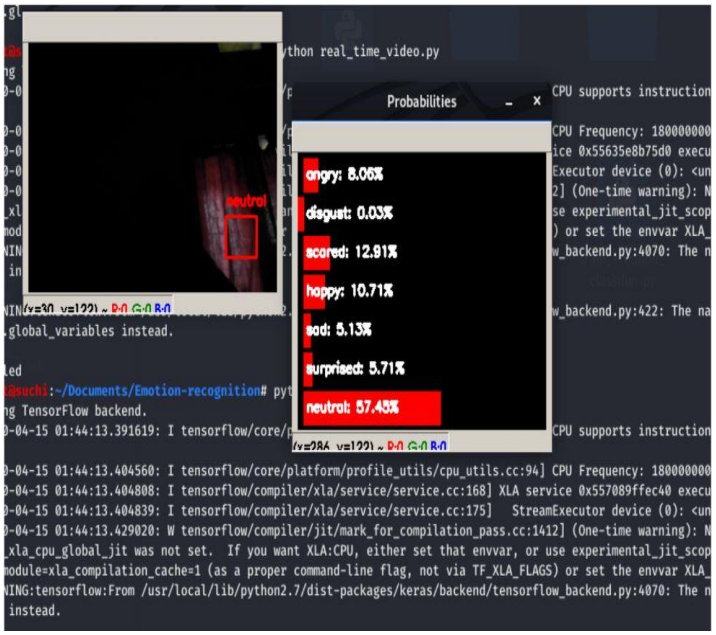

Fig 1: Real Time Video

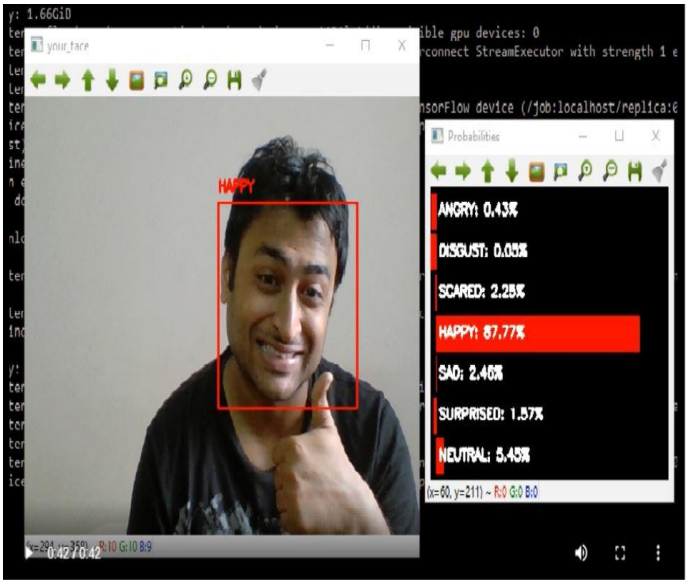

Fig 2: Image Detection

IX.FUTURE SCOPE:

High correct recognition rate (CRR), significant performance improvements in our system. Promising results are obtained under face registration errors, fast processing time. System is fully automatic and has the capability to work with video feeds as well as images. It is able to recognize spontaneous expressions. Our system can be used in Digital Cameras where in the image is captured only when the person smiles, or if the person doesn't blink his eyes. In security systems which can

identify a person, in any form of expression he presents himself. Rooms in homes can set the lights, television to a persons taste when they enter the room. Doctors can use the system to understand the intensity of pain or illness of a deaf patient.

X. CONCLUSION:

This project proposes a new approach for recognizing the category of facial expression. We have constructed the expression models by using average Bzier curves from several subjects. In this project, four different facial expressions of more than 20 persons pictures have been analyzed. In this project, 3rd order Bzier curve has been used to identify the face outlines and expressions. The adoption of the cubic Bzier curves means only four control points are sufficient to represent a curve. Although this method has been implemented for a few persons, but the experimental results nevertheless demonstrate that our system is reliable if the images represent a distinct view of the faces and are low resolution images. There is a lot of scope for the project to explore, for e.g. by improving the Eye-Lip detection procedure, and trying out the project for images taken at different angles and higher resolutions.

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