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Group No.: 9

Project Title:

Facial Expression detection

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1. INTRODUCTION(Abstract)

According to reports from various web sources, the most widely used mode of communication used by humans is Facial expression. Facial expression recognition is an evolving technology in the field of human-computer interaction. Facial expression recognition has its branches spread across various applications such as virtual reality, webinar technologies, online surveys and many other fields.

The objectives of the project are as follows:
- To explore the dataset FER-2013.
- To create a Convolutional Neural Network (CNN) model.
- To train and evaluate model
- Use the model to recognize facial expressions in real time and analyze its accuracy.

2. WORKING METHODOLOGY(Body)

The CNN designed is based on sequential model and is designed to have six activation layers, of which 4 are convolutional layers and the remaining 2 are fully controlled layers.

The two fully controlled layers are designed with training techniques like Dense, Batch Normalization, ReLu activation function and Dropout. The Dense function is used to connect each neuron of the previous layer to each neuron of the next layer. The remaining functions have similar applications. The output layer has two training techniques, Dense and Dropout. The dropout function outputs

a vector that returns the probability distributions of a list of potential outcomes.

In this project, OpenCV's Haar cascade is used to for the detection and extraction of the region containing the face from the video feed of Webcam. The video is converted to grayscale and the detected face is contoured or enclosed within a region defined to surround the face. This region of interest is resized to the size of the image and compared. The emotion is predicted and on top of face above contour rectangle.

3. INSIGHTS

- DLL file load failed. This error came so many times.
- There is an issue with the dataset.
- To train the model it took so much time.
- Collaboration of model and webcam was bit tricky.

4. Code

https://github.com/AtharvaDeshpande00/Final_Task

https://github.com/AtharvaDeshpande00/Final_Task/tree/master/RealTime

5. PHOTOS(Results)

https://github.com/AtharvaDeshpande00/Final_Task/tree/master/Photos