Stress Detection Using Mediapipe

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PROBLEM STATEMENT : STRESS DECTECTION AND EMOTION RECOGNITION USING DIGITAL IMAGE PROCESSING PRINCIPLES

ABSTRACT

The use of technology to analyze and accurately predict the emotion of a person is the main objective of this paper. This paper focuses on the practical application of MediaPipe in which human emotions can be widely categorized into five main categories - happy, sad anger, surprise and fear.

PROCEDURE FOLLOWED:

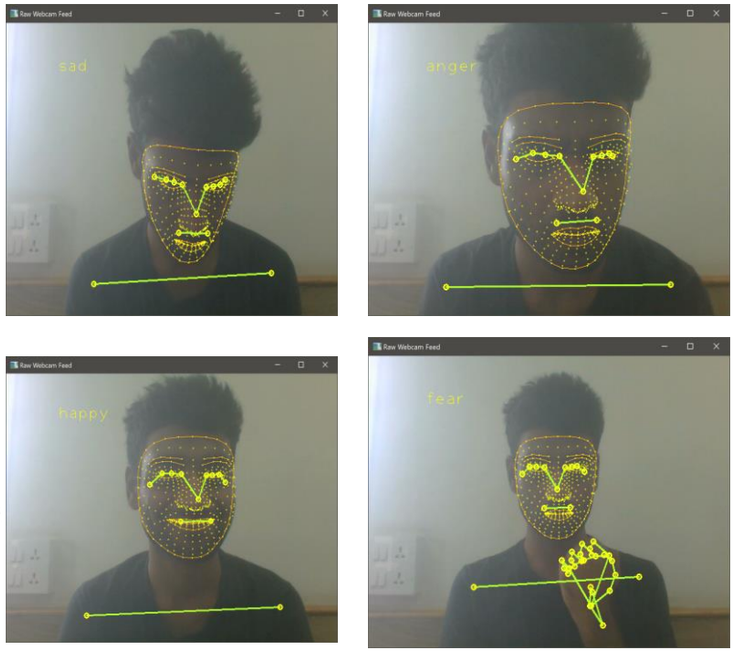
Data: Video data is collected in real time and divided into frames using openCV. For each frame, MediaPipe's holistic model, which gives landmarks of all face, pose and hand joints, is applied to get 468 coordinates of the whole body.

Building the Model: MediaPipe is an open source library which gives landmarks for all joints.

The data collected - all the x,y,z,v values for face,pose and hand are added together and converted to a numpy array and flattened. These 501 values along with a class name which are stored in a csv file for all the five emotions is presented to the Random forest classifier. It provides very good accuracy using cross validation while implicitly handling missing values.

Evaluation: After splitting the data using a 70-30 split for the train and test dataset, the model was run on the training dataset, which produced an accuracy of around 98.68% and then the model was fed the test data to predict the emotion to calculate accuracy.

RESULTS:



CONCLUSIONS:

The results of this experiment are the predicted emotions in real time. The model successfully classified all the five emotions in real time. The result obtained from the proposed model gives the estimated sentiment prediction of the subject based on the video information. Therefore, resulted output can be used for stress dectection.

References :

[1]M.T.Quazi ,S.C. Mukhopadhyay, N.K.Suryadevara,Y.M.Huang. Human Emotion recognition using smart sensors.
[2] S. M. Banu et. al., "A Novel Approach for Face Expressions,Recognition".
[3] Punidha Anguswamy,Inba S, Coimbatore Institute of technology. Human emotion recognition using Machine Learning Techniques.