

Emotion Detection

a) Which Neural Network and why

Convolutional neural network because it used mainly for image processing, classification, segmentation and also for other auto correlated data.

b) Which optimizer and why

Adam because it is a replacement optimization algorithm for stochastic gradient descent for training deep learning models. Adam combines the best properties of the AdaGrad and RMSProp algorithms to provide an optimization algorithm that can handle sparse gradients on noisy problems.

c) Which accuracy metric and why

Average accuracy metrics is used because it is the quintessential classification metric. It is pretty easy to understand. And it is easily suited for binary as well as a multiclass classification problem. Accuracy is the proportion of true results among the total number of cases examined.

d) Which loss function and why

Categorical crossentropy is used because it is used to quantify deep learning model errors, typically in single-label or multi-class classification problems.

e) Brief information on how cleaning was done (if any)

Read the csv file dataset and took only 5 emotions into consideration for this project which had the highest data in the dataset and ignored the usage column. I took only the pixels and associated emotion with it.

f) How data was got into the right shape (if any)

After taking only the pixels and the associated emotion, I reshaped the pixels of the image and put it into another array. Then I put emotions into an array and did one hot encoding on them. Then the data was split using train test split and after splitting, the independent features were normalized.

g) What functions/features of OpenCV were used

- CascadeClassifier() function was used in order to read the file which helps us detect the human frontal face xml file.
- VideoCapture() function was used in order to run the webcam in our laptop to detect emotion based on our face.
- cvtColor() function was used to convert the image to gray scale.
- resize() function was used in order to resize the gray scaled image.
- rectangle() function was used to put a rectangular shaped box around our face indicating it is detected.
- putText() function was used in order to write a text which tells us the emotion that is detected.

h) Which dataset have you used

Fer2013.csv is the dataset which I have used for this project.