Capstone Project

Face Emotion Detection System

Presented By

Chinmaya Devprasad
Hrushikesh Sahoo
Shubham Sharma
Aditya Gupta

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Problem Statements

Face detection has been around for ages. Taking a step forward, human emotion displayed by face and felt by brain, captured in either video, electric signal (EEG) or image form can be approximated. Human emotion detection is the need of the hour so that modern artificial intelligent systems can emulate and gauge reactions from face. This can be helpful to make informed decisions be it regarding identification of intent, promotion of offers or security related threats. Recognizing emotions from images or video is a trivial task for human eye, but proves to be very challenging for machines and requires many image processing techniques for feature extraction. Several machine learning algorithms are suitable for this job. Any detection or recognition by machine learning requires training algorithm and then testing them on a suitable dataset.

Data Preparation

Data set name-- Kaggle fer-2013

Link:-
https://www.kaggle.com/c/challenges-in-representation-learning-facial-expression-recognition-challenge/data.

Shape--

- 35,775 images belonging to 7 classes

Understand the Data

0:anger

1:disgust

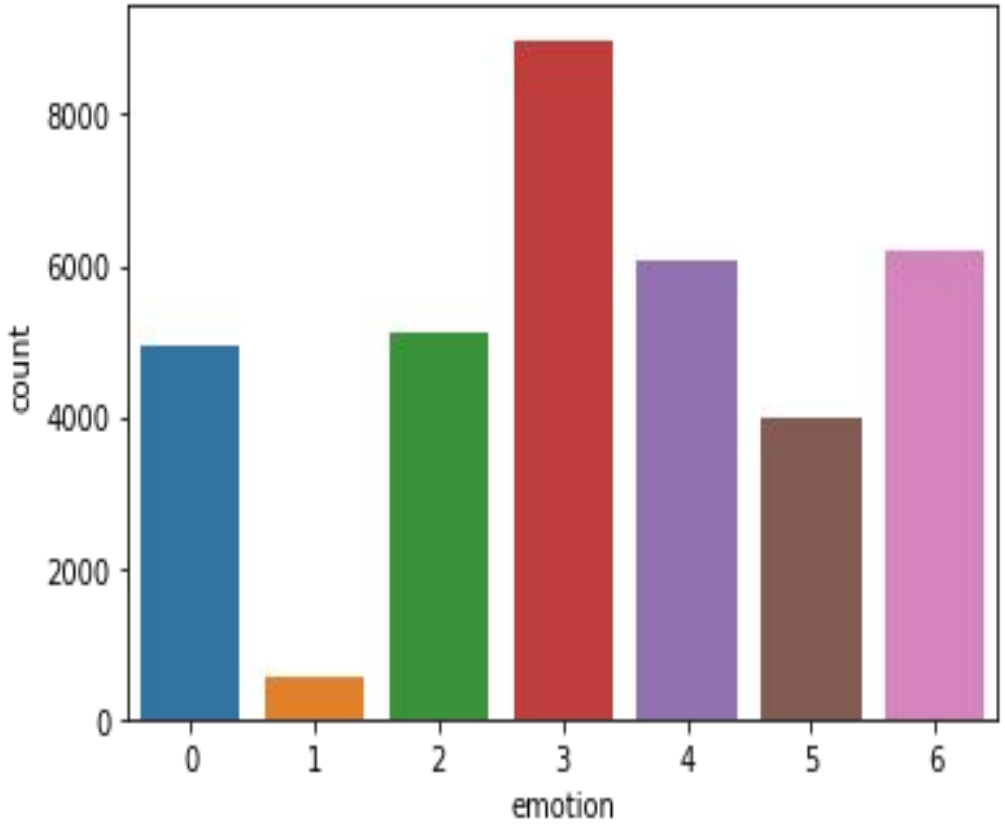
2:fear

3:happiness

4:sadness

5:surprise

6:neutral

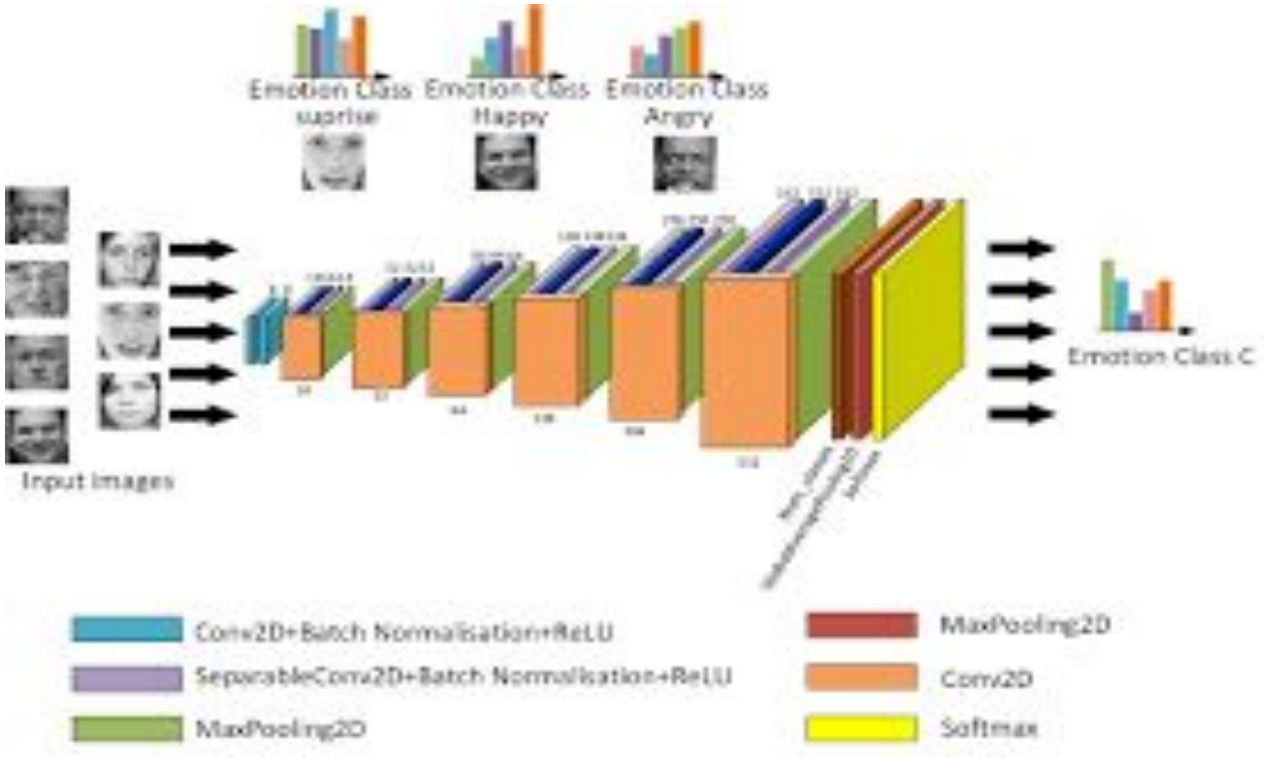


Model Selection

Model Name	Epoch	Train Accu.	Test Accu.
MLP	48	0.36	0.24
CNN	48	0.56	0.46
RESNET	48	0.32	0.25

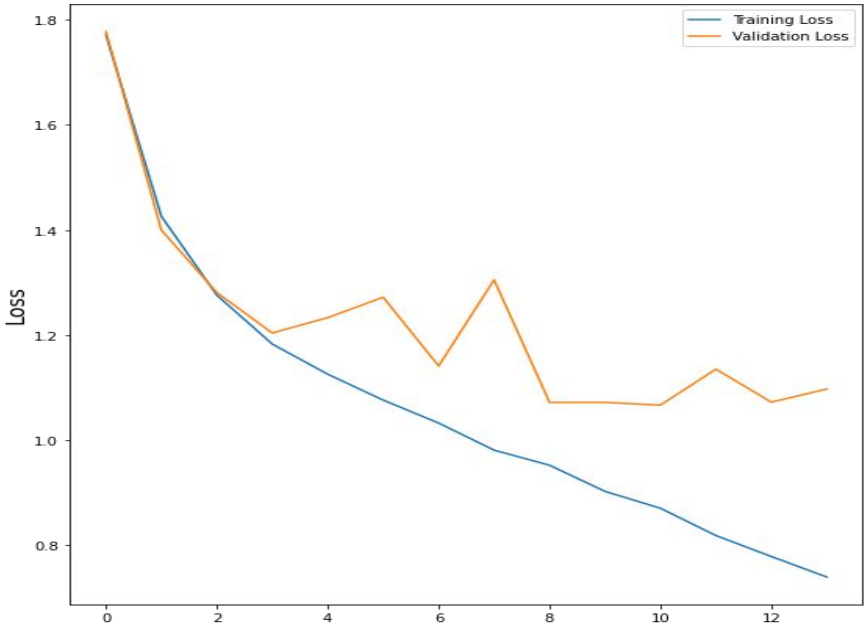
The Model

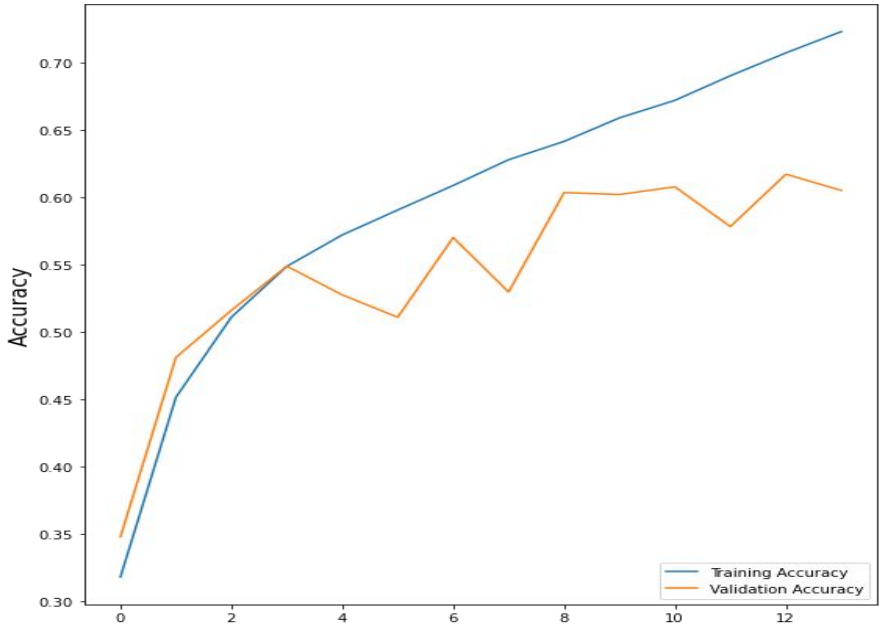
Total params: 4,478,727
Trainable params: 4,474,759
Non-trainable params: 3,968



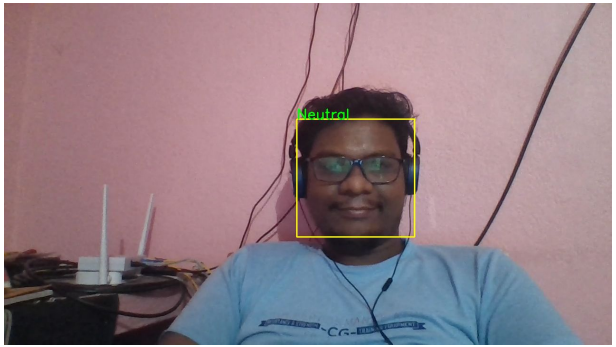
The Model

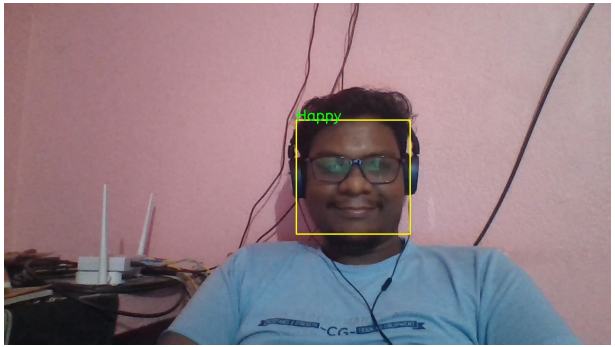
Optimizer : Adam

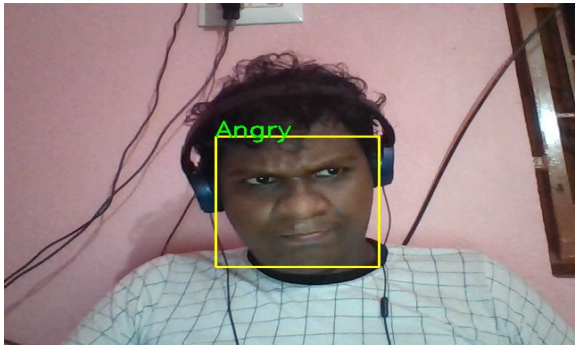


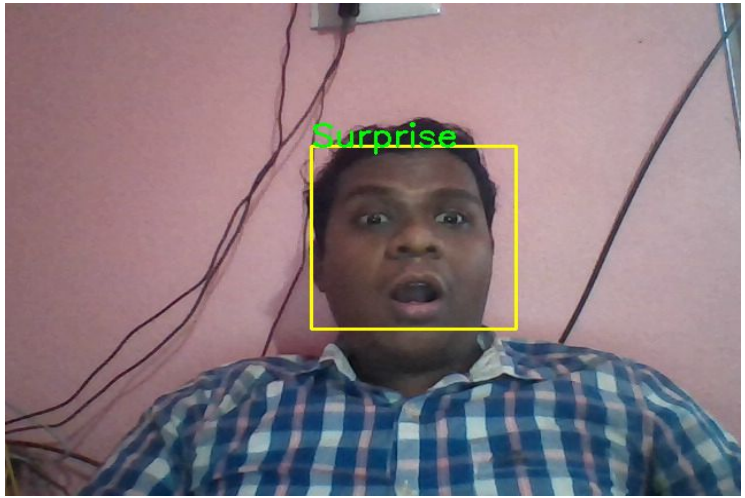


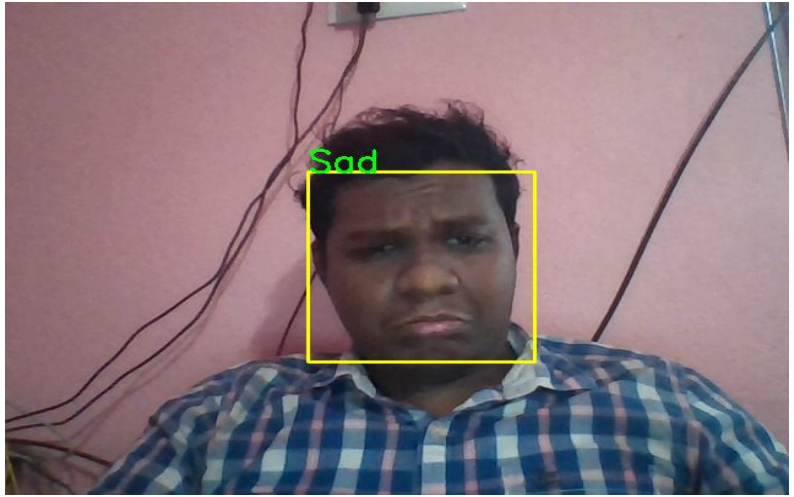
Test the model











The Deployment

- With AMAZON(AWS) EC2
- AWS Sage-maker(AWS) s3 Bucket
- Heroku
- AZURE

The Challenges

- The Version Constraint
- Space Constraint
- Deployment Constraint
- System Constraint
- Time Constraint

Acknowledgement

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