MIT Academy of Engineering, Alandi, Pune
School of Computer Engineering
Emosic: Emotion-Driven Music Selection

Project Motivation

- Emotion plays a major role in expressing or communicating human feelings and thoughts.
- To counter mental health issues and to make people's life simpler.
- By addressing mental health through a combination of real-time mood tracking and personalized music recommendations, the project helps to create a positive impact on individuals' lives, promoting emotional well-being and resilience.
- This project might help them to check his/her mood in real-time.
- Also, a music recommended based on emotions can entertain and uplift the mood of a person.

Research Aim

The aim of the Project is to design and develop a web based application for human facial emotion recognition and provide generalized music recommendation to the user using deep learning.

Project Objectives

- Accurate Identification of Human facial region
- Precise Detection of Human Emotions
- Suitable Generalized Music Recommendation
- User-Friendly Application

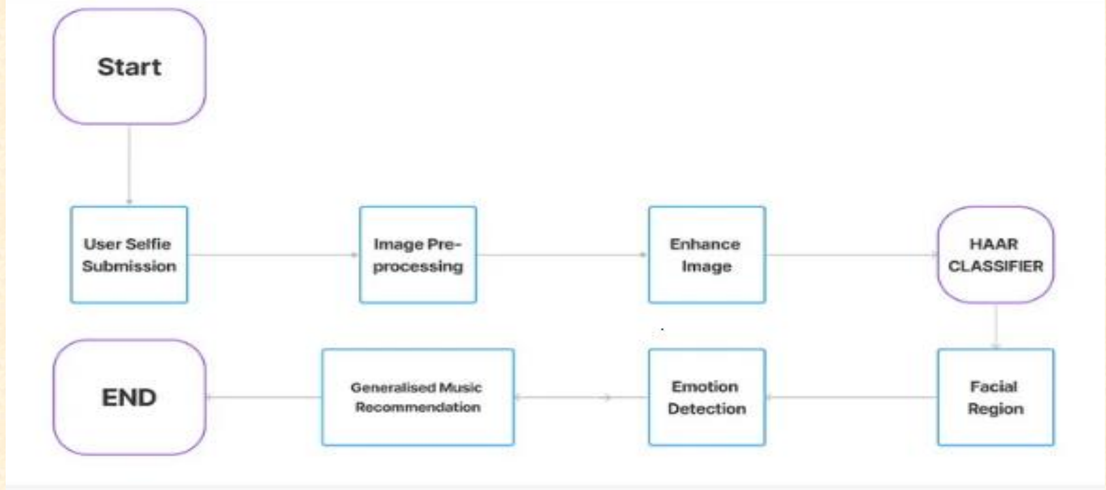
About Dataset

- The dataset being used is the **FER 2013 Dataset**.
- This Dataset contains 28709 images for training with 3 columns. The data consists of 48x48 pixel grayscale images of faces.
- The feature columns include the pixels of human faces of an image and the target column contains the class of emotion.
- Following are the seven categories in the dataset:
  0=Angry, 1=Disgust, 2=Fear, 3=Happy, 4=Sad, 5=Surprise, 6=Neutral

Implementation Steps

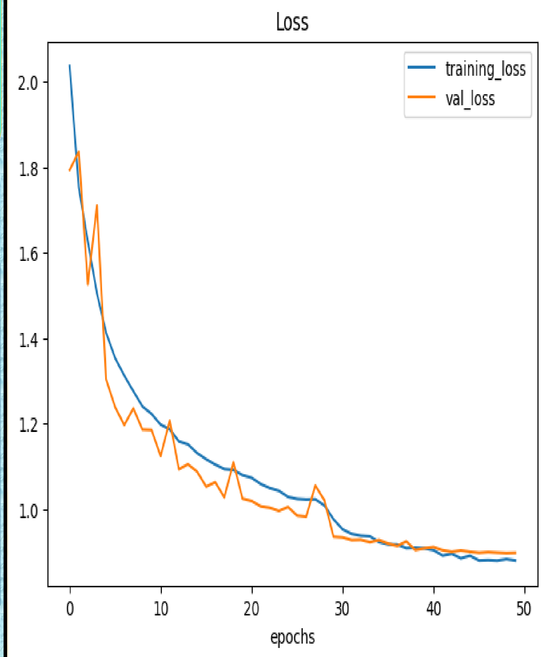
- The first phase of the project is to identify the facial region of humans in an image.
- The second phase of the project is to detect the emotion from the identified facial region of the human using CNN.
- Convolutional neural networks use principles from linear algebra, notably matrix multiplication, to discover patterns inside an image, making them more scalable for image classification and object recognition tasks.
- The third phase of the project is to provide the generalized song recommendation based on the emotion from the identified facial region of the human.

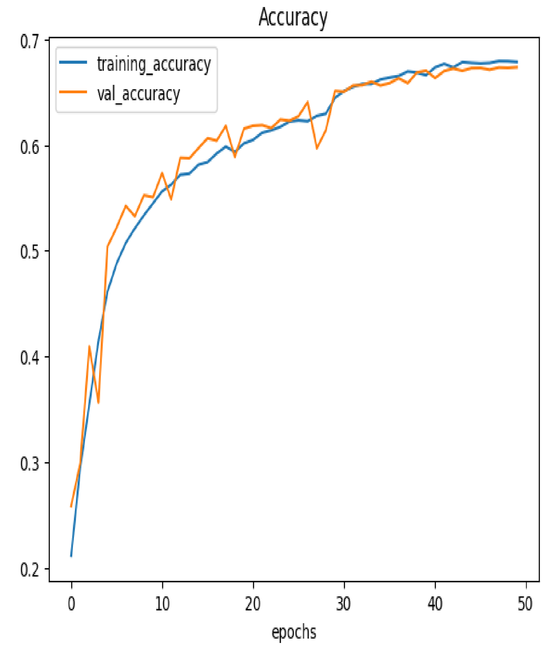
Flowchart of Proposed System



Experimental Results

- From the comparison of accuracies of all the models implemented with optimal parameters, we have arrived to the conclusion that CNN Model has the maximum accuracy.
- The model gave 71% accuracy for training data and 66% for validation data. On the other hand it gave 68% accuracy for the test data.





Conclusions

- Face Emotion Recognition is a crucial application of deep learning algorithms which can be extended to every industry.
- CNN models can achieve extraordinary results if appropriate and good amount of training data is provided.
- The project achieved the final objective of designing a web application designed specifically to capture the human face, identify the emotion and suggest music according to it.

Sunit Trivedi (0120200200), Nehaal Pandey (0120200245)