ML FACE EMOTION RECOGNITION

High Level Design

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LETSGROWMORE

1. INTRODUCTION

Why this High Level Design Document?

High-level design (HLD) explains the architecture that would be used to develop a system. The architecture diagram provides an overview of an entire system, identifying the main components that would be developed for the product and their interfaces.

Scope of High Level Design Document

The High-Level Design documentation presents the structure of the system as the application/database architecture, application flow, and technology architecture. High-Level Design documentation may use some non-technical terms, unlike low-level design which should be strictly technical jargon.

2. PROJECT DESCRIPTION

PROBLEM STATEMENT

Develop a system that recognizes facial expressions of input image and recommends the genre of music based on the detected emotions. The system will enhance user experience by providing personalized music genre recommendations aligned with their current emotional state.

PROPOSED SOLUTION

Machine learning is a field in computer science aiming to imitate the human learning process. Deep Learning is a branch of machine learning where deep learning system imitates the biological neuron. Here we will develop Deep Learning models to recognize the face emotions.

DATA INFORMATION

The dataset was taken from Kaggle (

URL: https://www.kaggle.com/datasets/msambare/fer2013),

This dataset contains images for each emotion. There are 7 emotion are their in this data set

1. Angry
2. Disgust
3. Fear
4. Happy
5. Neutral
6. Sad
7. Surprise

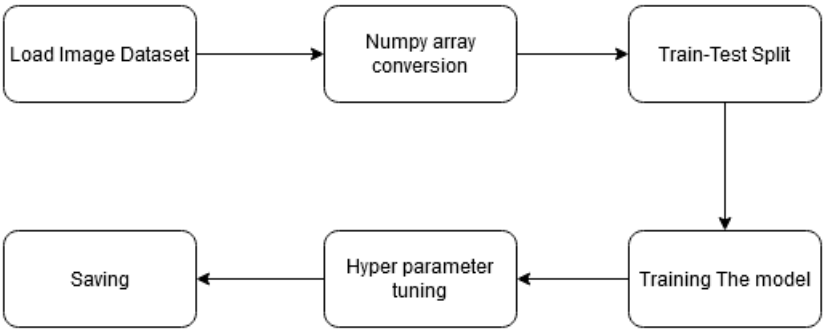
But the dataset is imbalanced.

TOOLS USED

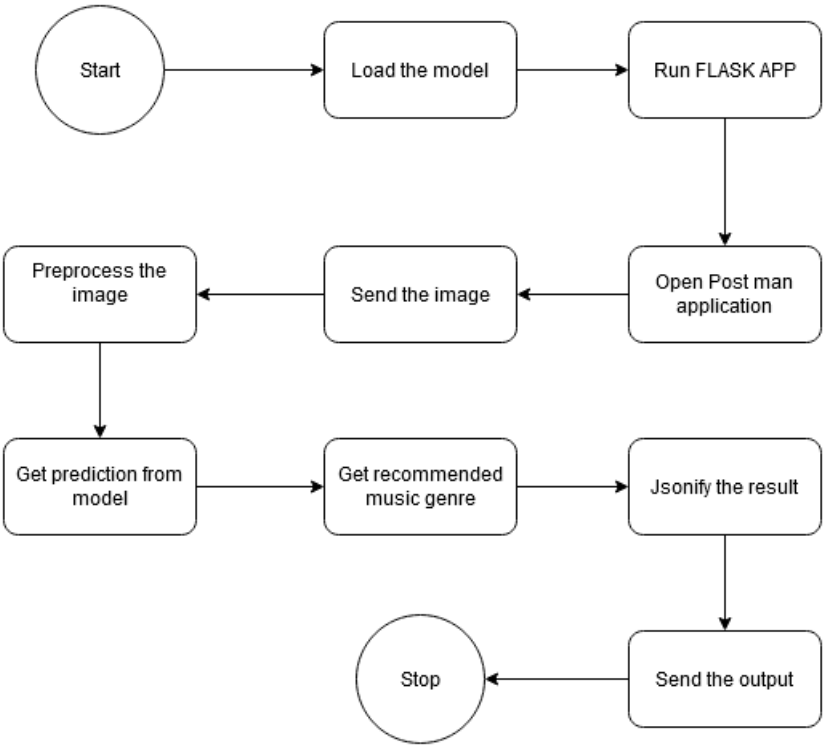
Python programming language and frameworks such as Numpy, OpenCV is used for image processing and Tensorflow library is used for model building. Flask is used to deploy trained model.

3. DESIGN DETAILS

Process flow



Deployment process



CONCLUSION

The model is deployed using Flask and using postman application you can send result to this API. This MTCNN model extracts the face from the input image and this extracted face is fed to CNN model to detect the face emotion and gives music genre.