HCL INTERNSHIP

Emotion Detection Through Audio, Image & Video

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analyze human emotion with the help of machine, How it detects (or) not.

Program applications that are/can be used :-

a. Google colab

b. Jupyter Notebook.

c. Python

Note :-

→ For Google colab & Jupyter Notebook you must have pip, install for the Pyaudio (libraries).

→ In python we have version like python 3.5, Python 3.6, python 3.7 ..... In python 3.7 we must have to install Pyaudio, to make use of the audio file.

System Requirements :-

→ Make sure you have installed all the necessary Libraries.

→ Windows 8 and above versions for better performance

→ If the PC/MAC have an Integrated graphics cards, it will boost the performance by enabling GPU meter.

Datasets that can be used :—

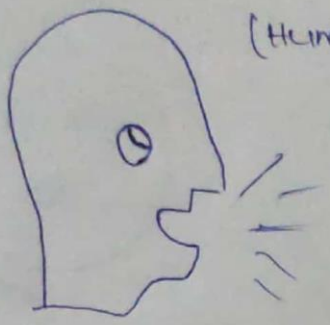
a. Urban Sound 8k (Contains Animal Sound).
b. Ravdess dataset.
c. Free sound (Contains Animals & Humans sound)
d. Vox celeb (Large scale).

Use-case/ Example (Real-time) :-

Suppose if a person got an accident (or) struck in any situation where he/she can't walk through his/her legs and can't take anything with the help of its hands. only can express him what needed with the help of speech and if a person is not there at that time; By that time this emotion recognizer can tell the emotion of that certain person & send the necessary requirements to the person.

Flow diagram

(Simple structure)



(Human speech)

(With the help of machine Learning using

Input terms → Machine → Output

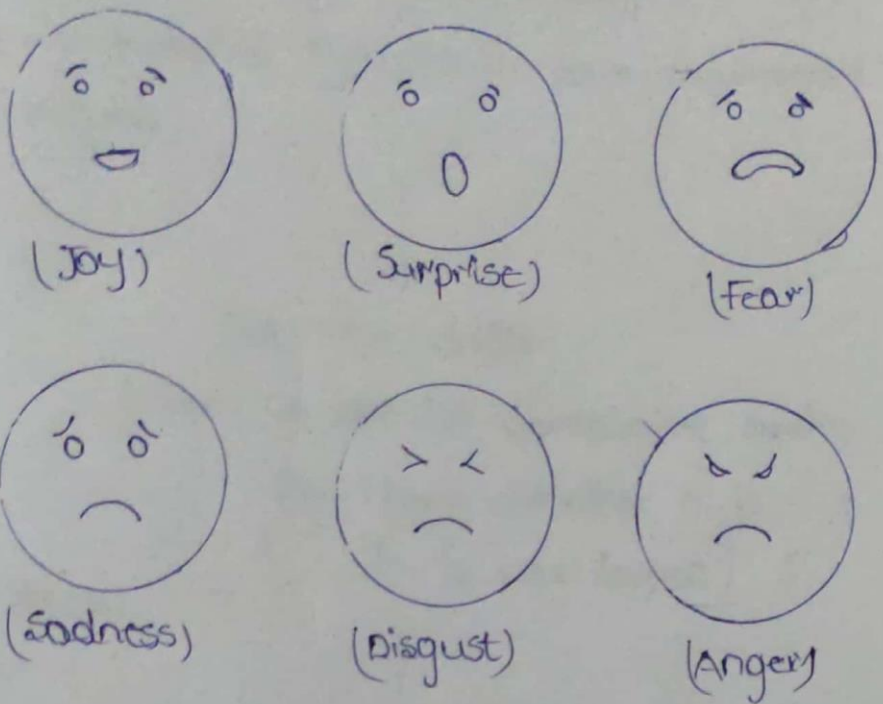
Features
Predictions
Attributes
Predictable variables

Algorithms
Techniques
Models

Classes
Respones
Targets
Dependant variables

↓

Recognizes the human emotion.



* This is the simplest form of the flow chart for speech emotion detector.

Detailed Flow chart

Import variables for speech recognition.

(Use !pip install , pypi speech recognition . if you haven't installed Pyaudio in your requirement session/area).

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Get the data.

(From a dataset containing audio file. check whether it is in a wav. format)

(Use Librosa)

↓

Store the data

(split into category, Label it)

↓

(Plot the data)

Train and test the data/split

(use spectogram, sample rate for each individual emotion).

↓

Extract the data use MFCC feature

(Take the frequency range and MEL values)

(Chroma)

↓

(USE LSTM model for better classification)
(Neural Network model).

or ELSE / if not

↓

TAKE MLP classifier.

↓

USE confusion matrix
(for accuracy, prediction, classification report).

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for the purpose to read/readable, store the predicted file in csv.

We can use different models & classifiers but for better result (accuracy).

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From here only if u want this,
(We can take the live demo of a person audio & can implement his file with plotting of axis).

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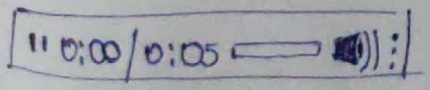

Speech of the person (Live demo).

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↓

"This is the additional work". If a machine detect emotion of the given data set. & for that emotion If you press Enter or click Yes button. It will gives a output of that emotion.

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If predicted emotion is Happy:

It will go to link (direct link).

Https://www.youtube.com/watch?v=Z67SGN_BXs.

Sad:

Https://www.youtube.com/watch?v=dTxTUDL4A-E

Surprise:

Https://www.youtube.com/watch?v=0R48_2nJtJg.

Same goes for Fear, Angry, Disgust.

— Thank You —

Note:-

Since this project requires different datasets for different phases.
I had already prepared a flowchart about speech emotion detection.
Up next I have created flow chart for image and video emotion detection.

Image Emotion Detection

Load an image

(Try to load an image with a clear human face and make sure there are no multiple faces and the human face must be clear.)

Use deepface for recognising the image

(If the face is not clear it prints error; no blur image must be uploaded and photo must be in your current working directory)

Apply predictions to it

Video Emotion Detection

What is a video?

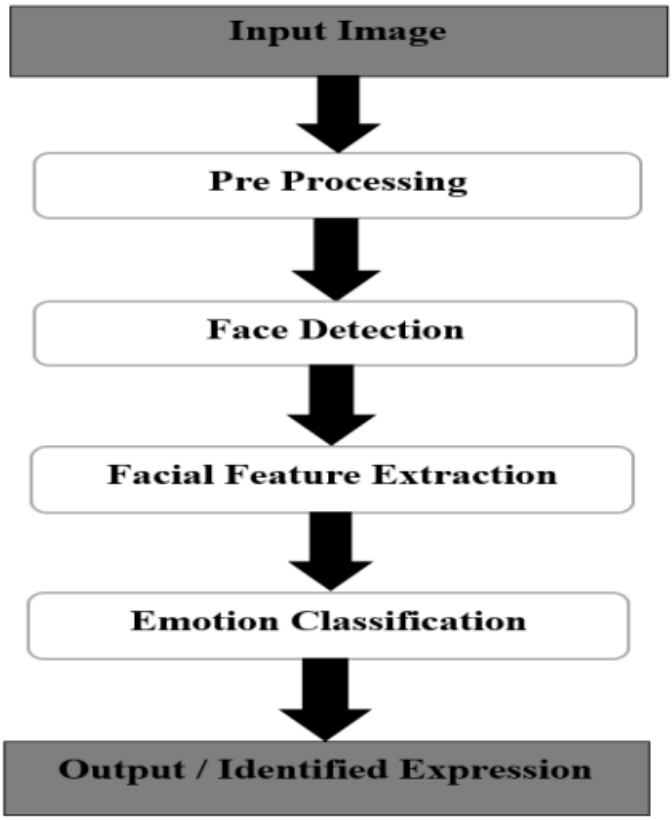
A recording of moving visual images made digitally on a video tape.

Or simply define as

A recording of a motion picture.

So here we need dataset which contains pictures of various types of people with different emotions.

Here I took Facial Emotion Detection 2013 → FER2013 Dataset from Kaggle.



So Here I save the model for future prediction and to apply with different kinds of methods.

THANKYOU