1. **Introduction**
   * 1. Number of Modules = 04
     2. Modules Description:

1. Acquisition and Extraction of Dataset:

In this module, we acquire the dataset from the reputed source such as Affectiva MIT Facial Expression Database (AM-FED), MMI Dataset. As the dataset obtained contains videos, we extract each frame in the videos and convert it to image and store it in Local File System.

2. Data Preprocessing and Labeling:

Here, we pre-process the image data obtained in module-1 by adjusting the resolution, transposing the image and converting it to float and later we label the data for training purposes.

3. Train and Test:

In this module, we train the neural network using 70% of the dataset as training data and the rest is used for testing or cross validation purposes. We obtain a model with weights and network which is used for further process.

4. Predictions

Here, we provide the sample input obtained in module-2 which is preprocessed, to the model output obtained in module-3 and predict the results such as the extent of expressiveness of a person.

1. **System Architecture**

NVIDIA GPU

……………….

UBUNTU 14.04 LTS

Dataset

Local File System

Desirable, Meaningful Classification Rate / Result

Test, Evaluate (Optimize - if required) with reference Benchmarks

Code, Train

**KERAS** (Framework)

Batch-n

Batch-3

Batch-2

Batch-1

Data Pre-processing

Batch Processing

Neural Network Algorithm(s)

**3. Graphical User Interface**

**RESULT**

**Upload Video**

**Take a Video**

**Upload Video:** An option provided on the UI, so that the user browses the local file system, selects a video and uploads it.

**Take a Video:** An option provided, so the user can record a video through Webcam.

**Result:** Space provided to display the prediction results on the screen.

**4.** **Data Flow Diagram**

Acquisition of Dataset

Data Preprocessing

Prediction

Prediction Results

Sample Input

Creation and Extraction of Dataset

Labeling

Optimization required?

Train and Test

Output

YES

NO

Weights and Network