A Project Report

on

"FRAME OF MIND- PLAY RHYTHM BASED ON EMOTIONS"

Submitted to the

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In partial fulfilment for the award of the Degree of

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in

Information Technology

by

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2021-2022

CERTIFICATE

This is to certify that the project report entitled **"FRAME OF MIND- PLAY RHYTHM BASED ON EMOTIONS"** is a record of bonafide work carried out by her under the supervision and guidance of **Prof. J. K. Kamble** in partial fulfilment of the requirement for **BE (Information Technology Engineering) – 2015 course** of Savitribai Phule Pune University, Pune in the academic year 2021-22.

Date: / /2022

Place: Pune

Prof. J. K. Kamble	**Dr. R. Sreemathy**	**Dr. A. S. Gotkar**
Internal Guide	Principal	Head of the Department

This Project report has been examined by us as per the Savitribai Phule Pune University, Pune requirements at Pune Institute of Computer Technology, Pune – 411043 on "FRAME OF MIND- PLAY RHYTHM BASED ON EMOTIONS"

Internal Examiner External Examiner

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LIST OF ABBREVIATIONS

SVM	Support Vector Machine

ABSTRACT

PC vision methods are used in a variety of industries, including traffic lights, event checking, advertising, medical care, quality control, and military innovation. Look affirmation is one of the subspaces of PC vision. The human face serves as the primary indicator of a person's social and energetic state. PC vision methods are characterized by looks such as terror, satisfaction, bliss, pity, and forcefulness. The concept of face recognition is used here to determine a person's mental state. The proposed framework can recognize the client's expressions and play the melody from the playlist in the same way.

Keywords: Facial looks, face acknowledgment, recognition of mind-set, suggest the melody.

CHAPTER I

INTRODUCTION

1.1 Overview

These days it has become necessary to identify the face recognition of a person who helps the organization and the individual to recognize a person's feelings. It can be used in all different areas where recognition plays an important role in identifying emotions Proposed are used on the basis of Haar cascade and SVM algorithm. Image processing also plays an important role in the submitted image provided counts. Noise reduction, image brightness, feature calculation is done using Haar cascade and emotions are detected by performing SVM algorithm. We are developing an effective method that will be used to compose a song in the playlist based on facial feeling.

Face feeling identification software quiets the testing process because changes in the scene, such as posture, facial mood, or light, might affect face images. Temperament location as a function of feeling is a contemporary concept in various domains that provides solutions to various problems. Music has the ability to improve one's life. One of the current themes in various sectors that provides an answer to various challenges is state of mind location dependent on feeling. At the point when they don't hear tunes that match their disposition in the circumstance, the heft of the music dear's customer base breeze up in a hot state.

Accordingly, a system that can lessen human endeavours of actually playing the song in view of human attitude is required.

1.2 Motivation behind project topic

Currently, music players are organized according to a playlist of songs. The songs in the playlist play at random, regardless of our mood. In some cases we need to play a tune that matches our state of mind, which requires effectively looking through the playlist, which is tedious. Once a song is chosen, it does not guarantee that the following song will be in the same genre or mood. We are needed to pick music from the playlist according to our mood, which is both time consuming and frustrating.

As a result, there should be an application that plays music based on our mood and is less time consuming and simple to use.

1.3 Objective

1) To detect facial expressions on the user's face.
2) To choose an emotional song from a playlist.

1.4 Purpose

The main concept of this project is to play songs based on the emotions of the user. The proposed application is able to extract the user’s emotion by capturing the facial feature of the user using a camera and thus will detect the user’s emotion The proposed method will be used for song recommendation from the playlist based on facial emotion.

CHAPTER II

LITERATURE SURVEY

2.1 Introduction

These days, it's necessary to distinguish human facial recognition, which aids the association in perceiving an individual's feelings. It can be applied to any situation where acknowledgment plays an important role in identifying a sentiment. Face feeling identification software quiets the testing process because changes in the scene, such as posture, facial mood, or light, might affect face images. Temperament location as a function of feeling is a contemporary concept in various domains that provides solutions to various problems. Music has the ability to improve one's life. One of the current themes in various sectors that provides an answer to various challenges is state of mind location dependent on feeling. At the point when they don't hear tunes that match their disposition in the circumstance, the heft of the music dear's customer base breeze up in a hot state. Accordingly, a system that can lessen human endeavours of actually playing the song in view of human attitude is required.

2.2 Existing Methodology

A user had to carefully search through his playlist and select tracks that would ease his mood and emotional experience when using standard music players. The existing system includes features such as Manual Song and Music Square Selection, which requires the user to manually classify songs according to specific moods for only four fundamental emotions. Such features meet the user's fundamental needs.

Disadvantages of the Current System include:

- It needs the user to choose the music manually.
- Songs played at random may not be appropriate for the user's mood.
- The user must first categorize the songs into distinct emotions before selecting a specific emotion to play them.

2.3 Proposed Methodology

Title	Publication	Authors	Technical Details	Key Points Taken
An Intelligent Music Player Based on Emotion Recognition	2017 2nd International Conference on Computational Systems and Information Technology for Sustainable Solution (CSITSS).	Ramya Ramanathan ;Radha Kumaran ;R Ram ;Rajat Gupta	Ramya Ramanathan et al.[1] proposes an intelligent agent that sorts a music collection based on the emotions conveyed by each song and then suggests an appropriate playlist to the user based on his/her current mood using k-means clustering. The author uses Cohn Kanade extended datasetmodel.	Emotion recognition, intelligent music player.
Emotion-Based Music Player	2019 5th International Conference on Engineering, Applied Sciences and Technology (ICEAST)	Krittrin Chankuptarat; Raphatsak Sriwatanaworachai ;Supannada Chotipant	Krittrin Chankuptarat et al.[2] proposes an emotion-based music player, which can suggest songs based on the user's emotions; sad, happy, neutral and angry. The application receives either the user's heart rate or facial image from a smart band or mobile camera. It then uses the exact classification to classify the user heart rate to identify the user's emotion.	Music player, Emotion.

Title	Publication	Authors	Technical Details	Key Points Taken
EMO PLAYER: Emotion Based Music Player	IRJET,Volume : 05 Issue: 04 | Apr-2018. nce (TAAI)	Hemanth Adarsh1, Aswani C.B1, Veena A Kumar	Author Focused on the study of the changes in curvatures on the face and intensities of corresponding pixels of images Artificial Neural Networks (ANN) was used in the classification extracted features into 6 major universal emotions like anger, disgust, fear, happy, sad, and surprise. A Scaled Conjugate Gradient back-propagation algorithm in correlation with the two-layered feed-forward neural network was used and was successful in obtaining a 92.2 % recognition rate.	SVM, Machine learning, Training, Testing, Songs, Emotions.

Title	Publication	Authors	Technical Details	Key Points Taken
Smart Music Player Integrating Facial Emotion Recognition and Music Mood Recommendation	2017 IEEE	Shlok Gilda, Husain Zafar, Chintan Soni and Kshitija Waghurdekar Silong Peng	Author present an affective cross- platform music player, EMP, which recommends music based on the real- time mood of the user. Music player contains three modules. The Emotion Module takes an image of the user's face as an input and makes use of deep learning algorithms to identify their mood with an accuracy of 90.23%. The Music Classification Module makes use of audio features to achieve a remarkable result of97.69% while classifying songs into 4 different mood classes	Emotion recognition, Music information retrieval.

Title	Publication	Authors	Technical Details	Key Points Taken
EMO-MUSIC	IRJET-V712275	Savesh Pal, Ankit Mishra, Hridaypratap Mourya, Supriya Dicholkar	Here author propose a Emotion based music player Emo player. Emo player is an music player which plays song according to the emotions awareness The emotion are recognized using a machine learning method suppor vector machine algorithm. It finds an optimal boundary between the possible outputs. The training dataset which we used is contain 400 faces and its desired values or parameters.	Facial expression, Haar cascade classifier, Background detection.
Emotions Based Music Player	IRJET-V817457	Charu Agrawal, Meghna Varma, Anish Varshaney, Khushboo Singh, Chirag Advani, Dr. Diwakar Yagyasen	The proposed system can detect the facial expressions of the user and based on his/her facial expressions extract the facial landmarks, which would then be classified to get a particular emotion of the user. Once the emotion has been classified the songs matching the user's emotion would be shown to the user.	Emotion recognition, Computer vision, Camera.

CHAPTER III

REQUIREMENT SPECIFICATION AND ANALYSIS

3.1 Problem Definition

The aim of this project is to implement a system i.e. Frame of mind Play Rhythm based on Emotions that helps to play the song by detecting the mood of the person from their non-verbal form of communication such as facial expression.

3.2 Scope

The System provides an interface to the user where they can detect the emotions and play songs accordingly. This system, does have scope for improvement in the future. There are various aspects of the application that can be modified to produce better results, and a smoother overall experience for the user.

3.3 Aim and Objective(s) of the work

3.3.1 Project Aim

The aim of this project is to implement a system i.e. Frame of mind Play Rhythm based on Emotions that helps to play the song by detecting the mood of the person from their non-verbal form of communication such as facial expression.

3.3.2 Project objectives

- Assist governments in learning about social activities, citizen behaviour, and city challenges all at once.
- Such profiling may in fact be useful for supporting the decision-making process of local administrations and security officers, as well as for citizens.
- Having a clear and updated snapshot of what actually happens in a given area or neighbourhood of a city at a given time
- Which improve the quality of services offered to citizens, thus in turn increasing their quality of life, and help in handling problems such as crime and weather threats in real time.
- Help tourist to know the city better and be prepared in prior.
- Help to monitor the city well by the higher authority. And improve in specific area and develop.

3.4 Project Requirements

1. Frame Extraction / Live Camera:

Client can transfer/catch pictures utilizing live camera on the application, application then, at that point, extricates outlines from the video. These frames are saved on nearby machine. 640x480 is the format for the frames.

2. Face Detection :

Apply the Haar cascade Classifier for the face detection in images.

3. Pre-Processing on images :

When we get the appearances apply the preprocessing on pictures like commotion expulsion, standardization and so forth

a) **RGB to Gray Scale Image：**

Convert the picture into Gray scale by taking the normal of the every pixel RGB.

b) **Image Normalization：**

Standardization is a cycle that changes the scope of pixel power esteems to keep away from mental interruption or exhaustion from the pictures.

c) **Noise Removal :**

Separating mistakes in the picture procurement process brings about pixel esteems that don't mirror the genuine thickness of the real scene.

4. Feature Extraction

A SVM comprises of an information and a result layer. SVM will order the highlights based on preparing dataset. Extricates the Features of countenances from the picture like nose, lips, and eyes as focuses as follows,

i) Eyebrow raises
ii) Upper eyelid to eyebrow distance
iii) Inter-eyebrow distance
iv) Upper eyelid
v) Mouth width
vi) Mouth Open

5. Feature Calculation

In a segment all prohibited highlights are determined and controlled by the eyes, mouth and nose space of the human face. Based on this estimation looks are gotten.

6. Emotions Detection and Music recommendation:

By applying SVM classifier on the removed elements the feeling Happy, Neutral, Sad are distinguished. In view of the client's disposition like tragic, furious, party loose, glad the specific tune from the playlist is played.

3.5 Design and Implementation Constraints

3.5.1 Constraints

1. **Design Constraints**

- **Error Recognition**: The system should give error on not giving any input of image.
- **Speed:** There should be quick response of the system by detecting the emotions.
- **Result:** The songs from playlist is played based on emotion detected.

2. **General Constraints**

- This system works for Admin.
- Input of image should be given to detect emotions.

3.5.2 Assumptions and Dependencies

1. **Assumptions:**

- Admin must have basic knowledge of computer.

2. **Dependencies:**

- Only Administrators will be able to edit main configurations.
- Camera is required to capture images.

3.5.3 System Feature 1(Functional Requirement)

- **Admin Module**

- Admin will register.
- Admin will login.
- Admin will load images into the system.

- **System**

  - The system takes input from the admin.
  - The system applies image processing on the image.
  - Extract feature from the image
  - The system applies the Haar cascade algorithm Face detection
  - The system then recognizes the emotion detected from the image by using the SVM algorithm.
  - Recommend Song based on emotions.

3.6 External Interface Requirements

3.6.2 User Interfaces

- User interface will be given alert to input an image.
- User interface will display the emotion detected from the image.
- User interface will provide good look and feel effect so that it will user friendly
- And he or she can operate system very efficiently.
- Various Tools will be available on the user interface which the user can operate.

3.6.3 Hardware Interfaces

- Processor: 1 gigahertz (GHz) or faster processor or SoC
- RAM: 1 gigabyte (GB) for 32-bit or 2 GB for 64-bit.
- Hard disk space: 16 GB for 32-bit OS 20 GB for 64-bit OS.

3.6.4 Software Interfaces

Software Tool to use:

Netbeans:

Netbeans is a product development stage written in Java. The Netbeans IDE is essentially planned for improvement in Java, yet additionally upholds different dialects, specifically PHP, C/C++ and HTML5. Netbeans is cross-stage and runs on Microsoft Windows, Mac OS X, Linux, Solaris and different stages supporting a viable JVM.

- User interface management (e.g. menus and toolbars)
- Client settings the board
- Capacity the board (saving and stacking any sort of information)
- Window the board
- Wizard structure (upholds bit by bit exchanges)
- NetBeans Visual Library
- Coordinated improvement devices

Feature Highlights:

JDK 1.8

• Java Development Kit (JDK) is a software development tool used to develop Java applications and applets. Includes Java Runtime Environment (JRE), translator / uploader (java), moderator (java c), shortcut (jar), document generator (java doc) and other tools needed for Java development.

• Java virtual machine (JVM) is an invisible computer machine that allows a computer to run a Java application. There are three JVM concepts: specification, implementation, and example.

• The information is a document that officially explains what is required for the use of JVM. Having one specification ensures that all applications are compatible.

• An example of JVM is a process implementation program that creates a computer program embedded in a Java byte code.

MYSQL Database 5.0

• Simplified connection wizard

• Guided installation to JDBC driver

• Editing and deployment of stored procedure.

3.6.5 Communication Interfaces

The system shall use the HTTP protocol for communication over the internet and for the intranet communication will be through TCP/IP protocol suite.

3.6.6 Performance Requirements:

- **High Speed**

  System should process requested task in parallel for various action to give quick response then system must wait for process completion and detect the mood and play song.

- **Interoperability:**

  System should have the ability to exchange information and communicate with internal and external applications and systems and must be able exchange information both internally and externally.

- **Reliability:** System should be delivering specified services.
- **Availability:** The system should have the ability to deliver service whenever required.
- **Security**: The ability of the system of preventing itself from intrusion that occurs.
- **Platform Independent**: The system should be platform independent and run on any OS.

3.6.7 Safety Requirements:

- The information wellbeing should be guaranteed by sorting out for a protected and dependable transmission media.
- The source and objective data should be entered accurately to abstain from any abuse or breaking down.
- Wellbeing necessities against the catastrophic event and mishaps.
- Disappointments because of specialized issues.
- Update application when informed.

3.6.8 Security Requirements:

Secure access of secret information (client's subtleties).
Data security implies shielding data and data frameworks from unapproved access, use, divulgence, disturbance, adjustment or annihilation.
The terms data security, PC security and data affirmation are much of the time erroneously utilized conversely. These fields are interrelated regularly and offer the shared objectives of ensuring the privacy, respectability and accessibility of data; be that as it may, there are some inconspicuous contrasts between them.

- Client secret word should be put away in scrambled structure for the security reason
- All the client subtleties will be open to just significant position people.
- Access will be controlled with usernames and passwords.

3.7. Project Plan

3.7.1 Modules split up

Our Project can be split into 3 modules that is

- Module-1: Face Detection Using HAAR Classifier
- Module-2 : Emotion Detection Using SVM
- Module-3 : Recommendation Module

Project Team Roles and Responsibilities

Name	Roles	Responsibility
Chandrakantesh More	Module 3	Recommendation Module
Yogesh Sanap	Module 1	Face Detection Using HAAR Classifier
Tushar Vispute	Module 2	Emotion Detection Using SVM

3.6.2. Project Plan 3.0

Task Name	December	January	February	March	April	May
Project Planning Update	1 week					
Learning and Improvement	2 weeks					
Learning Tools	1 week					
Design		3 weeks				
Algorithms		1 week	3 weeks			
Coding & Database Designing			1 week	4 weeks	4 weeks	
Testing						2 weeks

Fig A: Gantt Chart

Figure A gives a detailed overview of the plan by which this group intends to complete the entire project. The tasks are colour coded according to members to whom the tasks are assigned.

CHAPTER IV

SYSTEM ANALYSIS AND DESIGN

4.1 Architecture

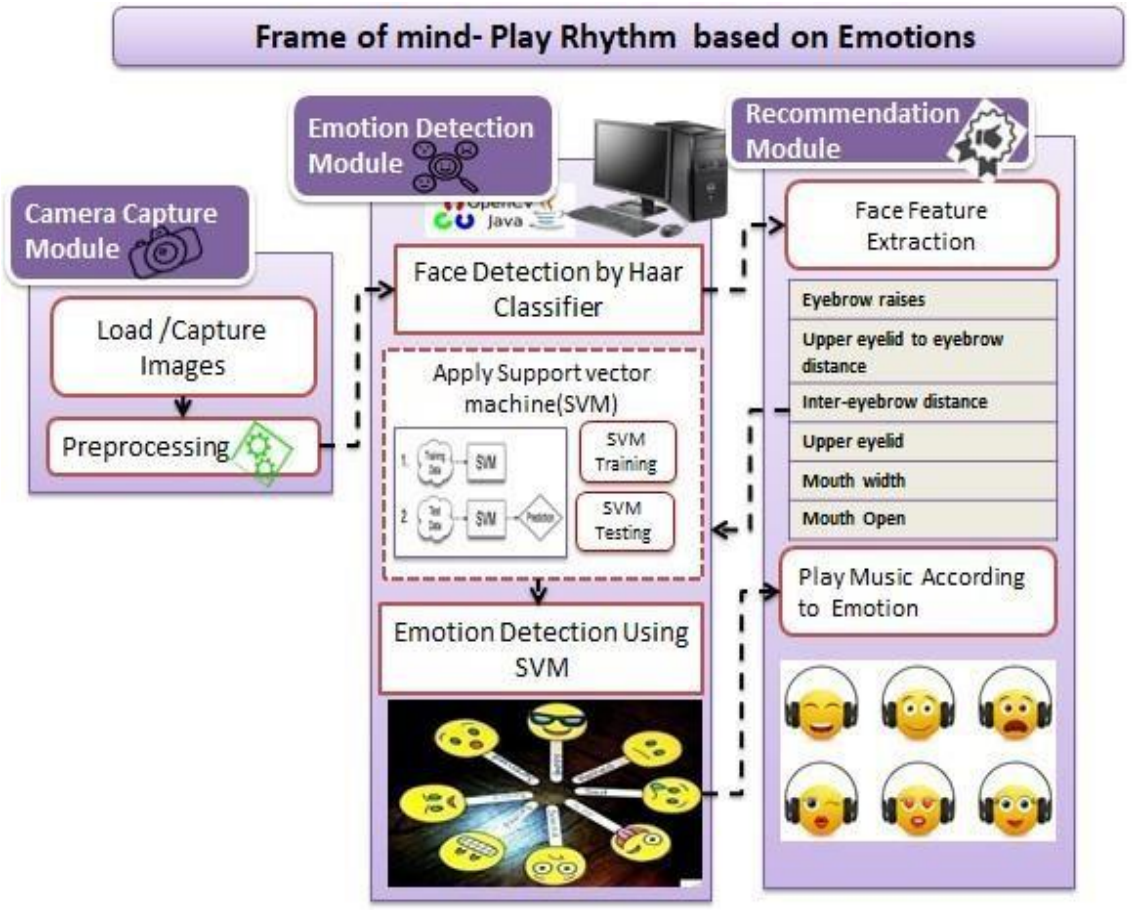


Figure 1: System Architecture

Figure 1 depicts the architecture for the proposed system, as we split up the project in modules.

4.2 WorkFlow Diagram

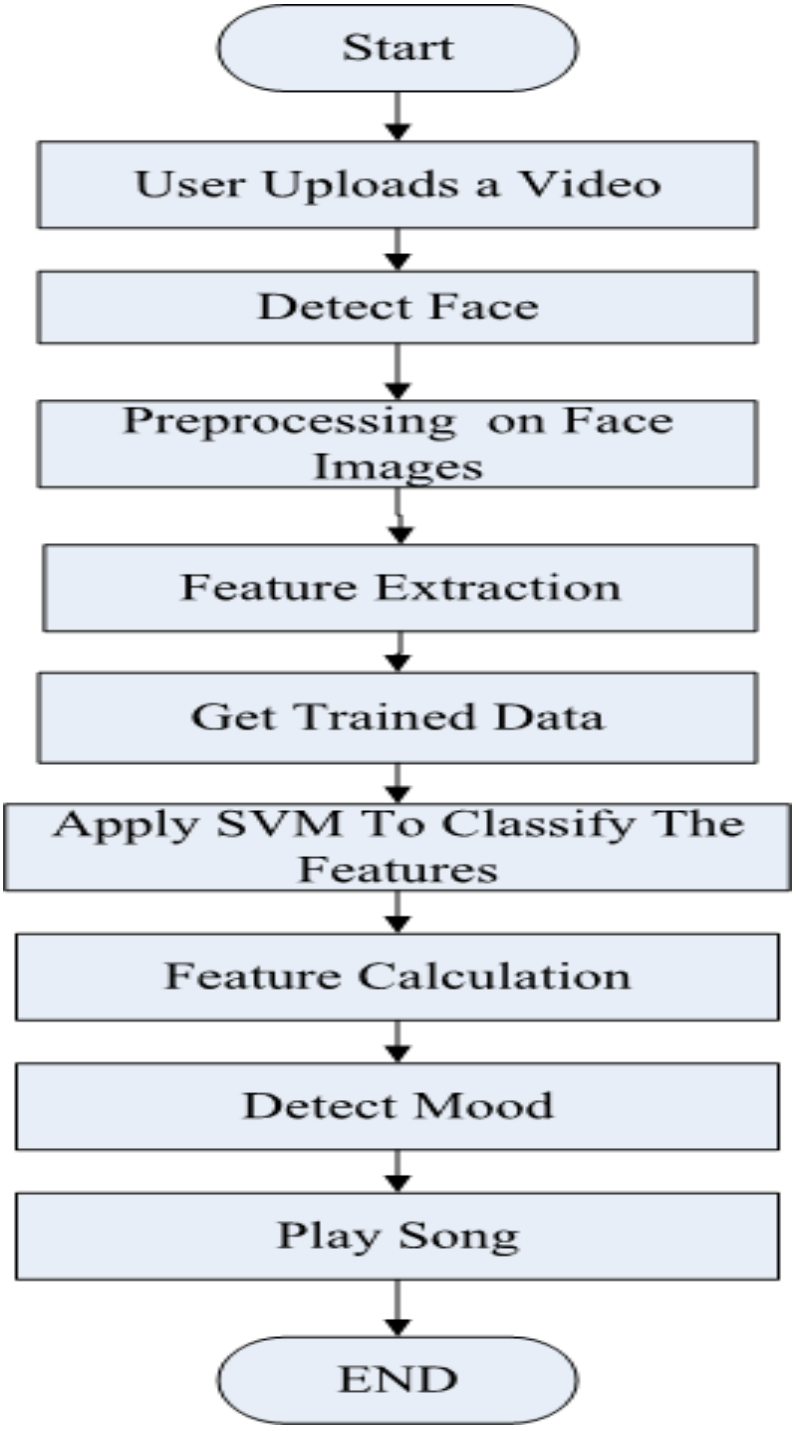


Fig 2: Workflow

4.2 Data Flow Diagram

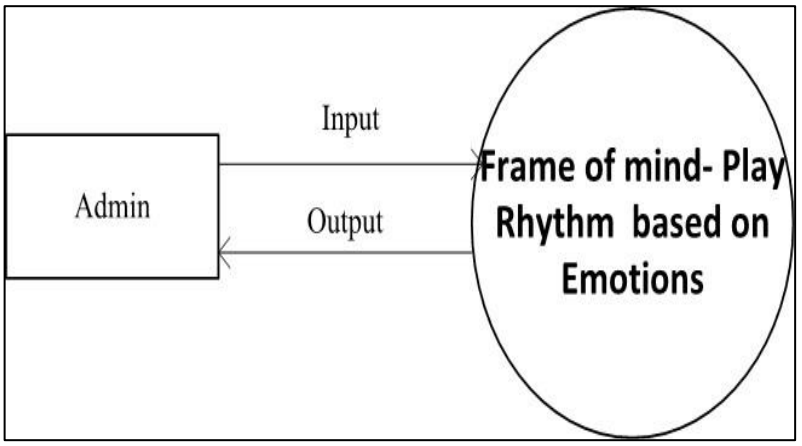


Fig 3a: DFD (Level 0)

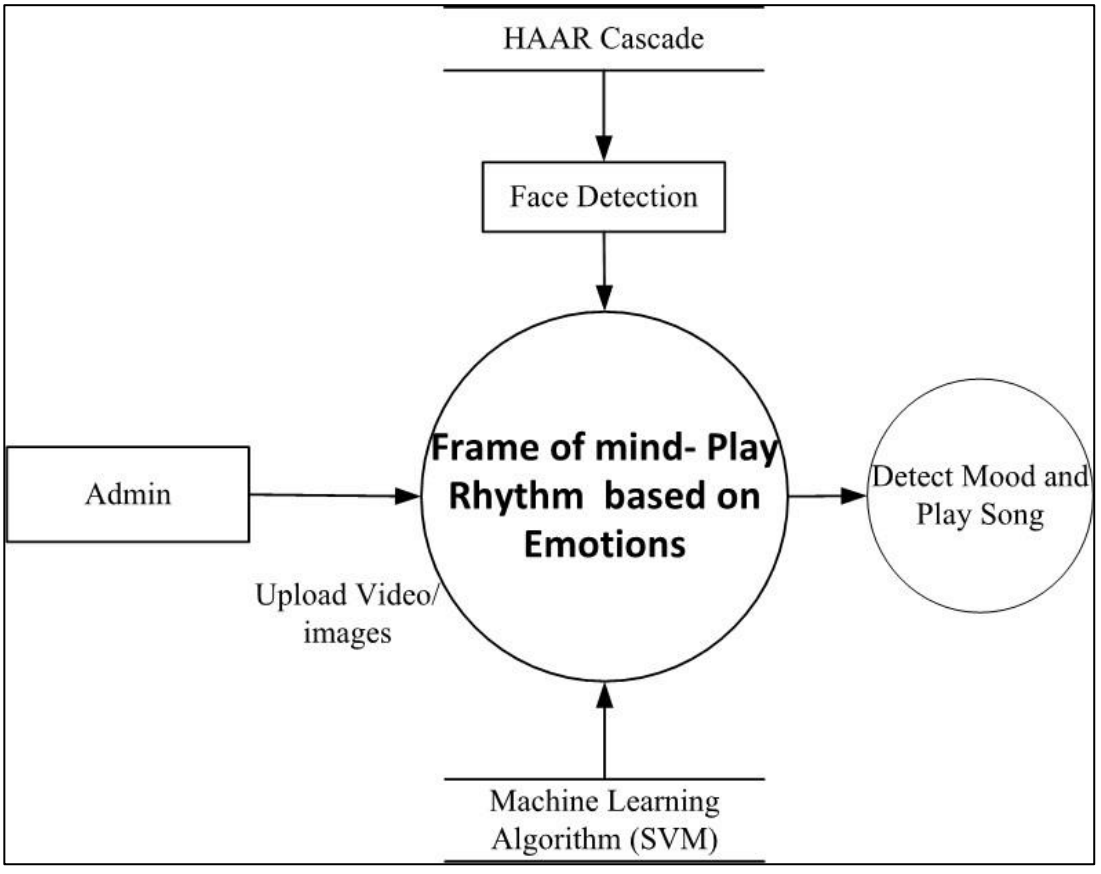


Fig 3b: DFD (Level 1)

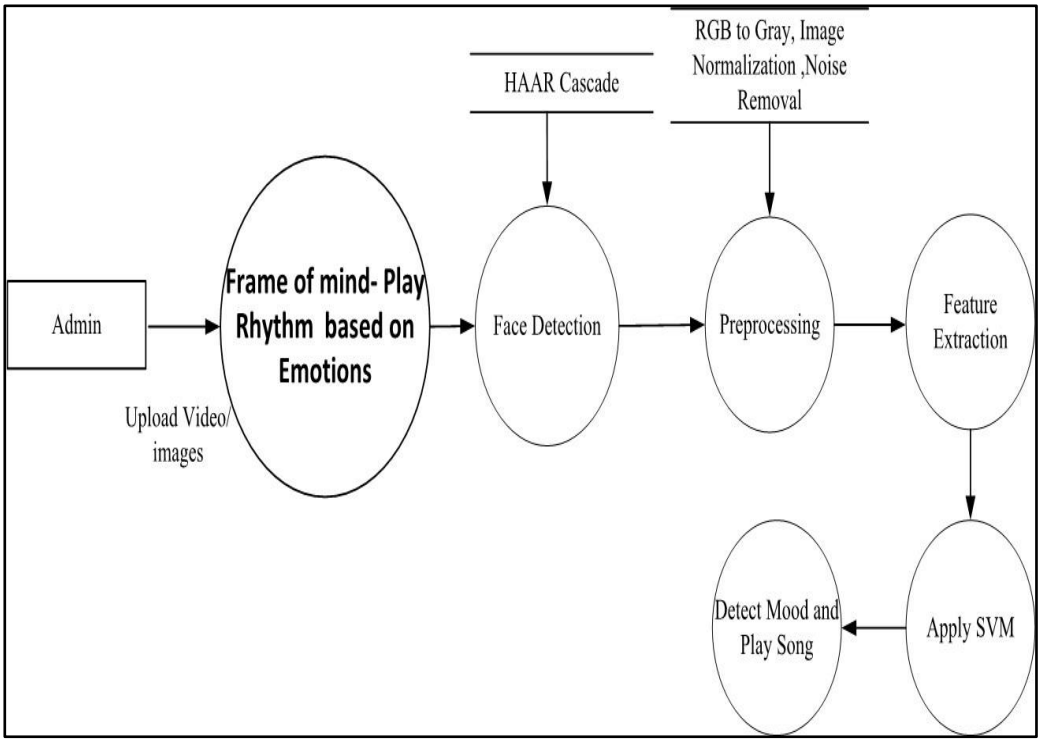


Fig 3c: DFD (Level 2)

4.1 STRUCTURAL DIAGRAM

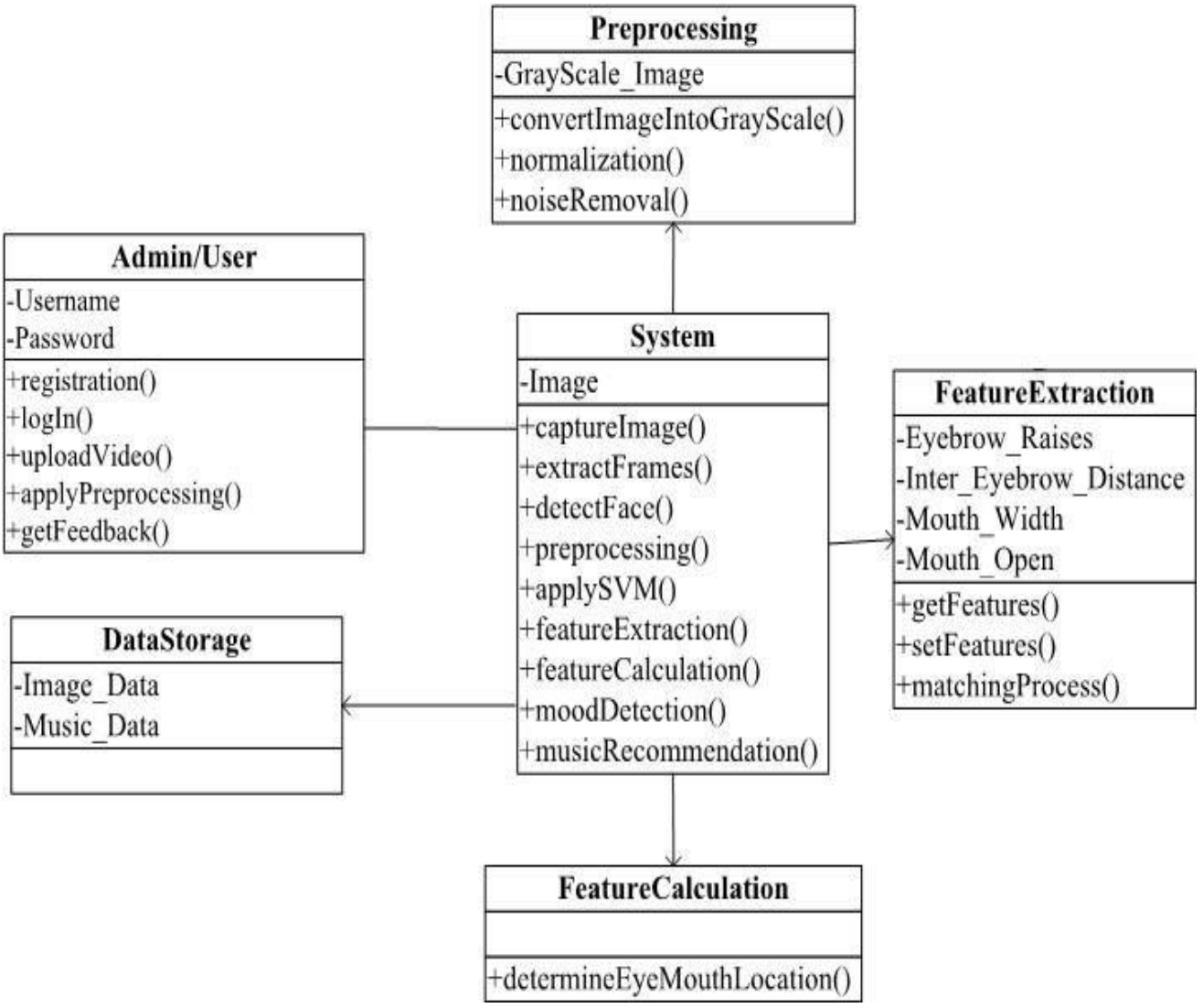


Figure 4: Class Diagram

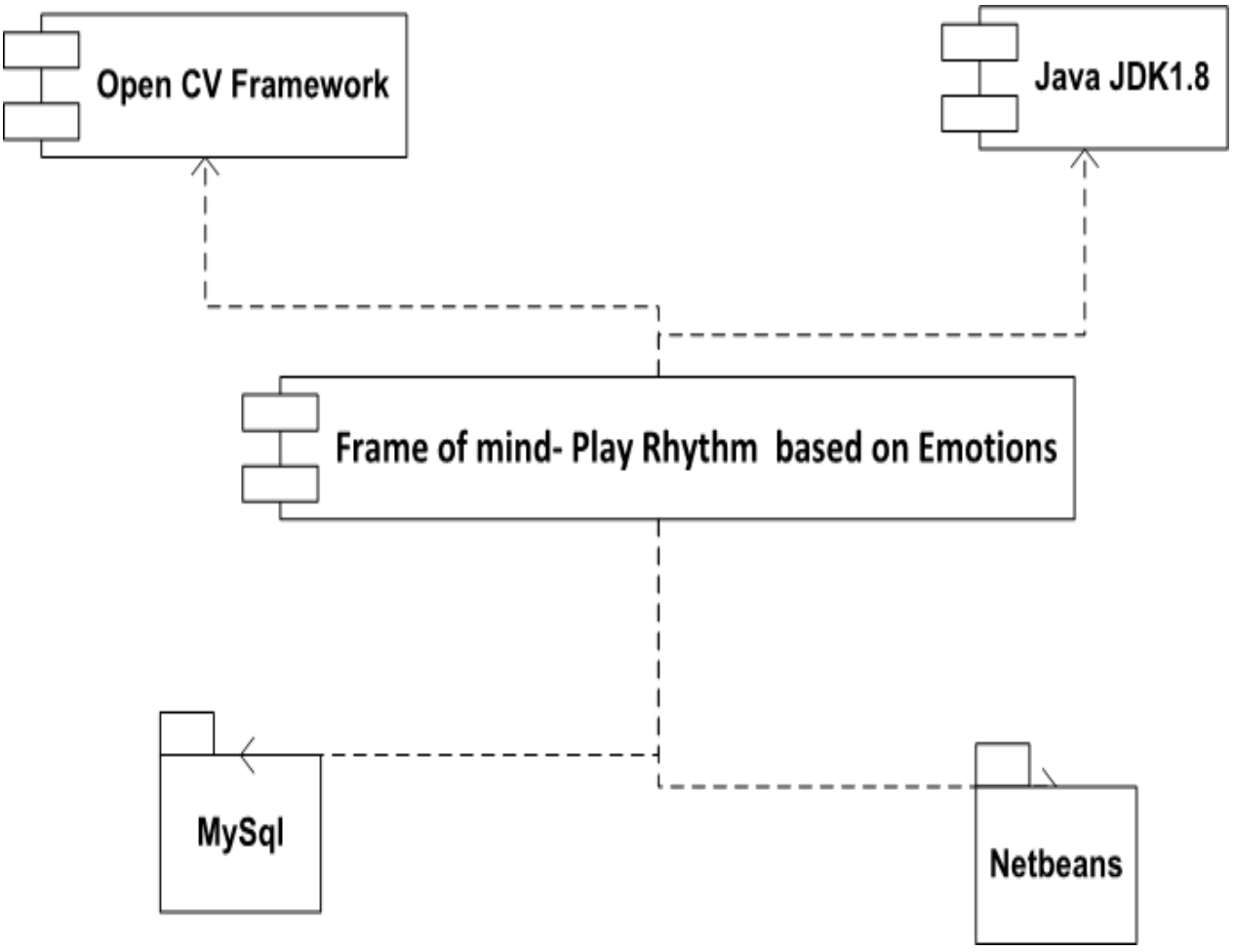


Figure 5: Component Diagram

4.3 BEHAVIORAL DIAGRAM

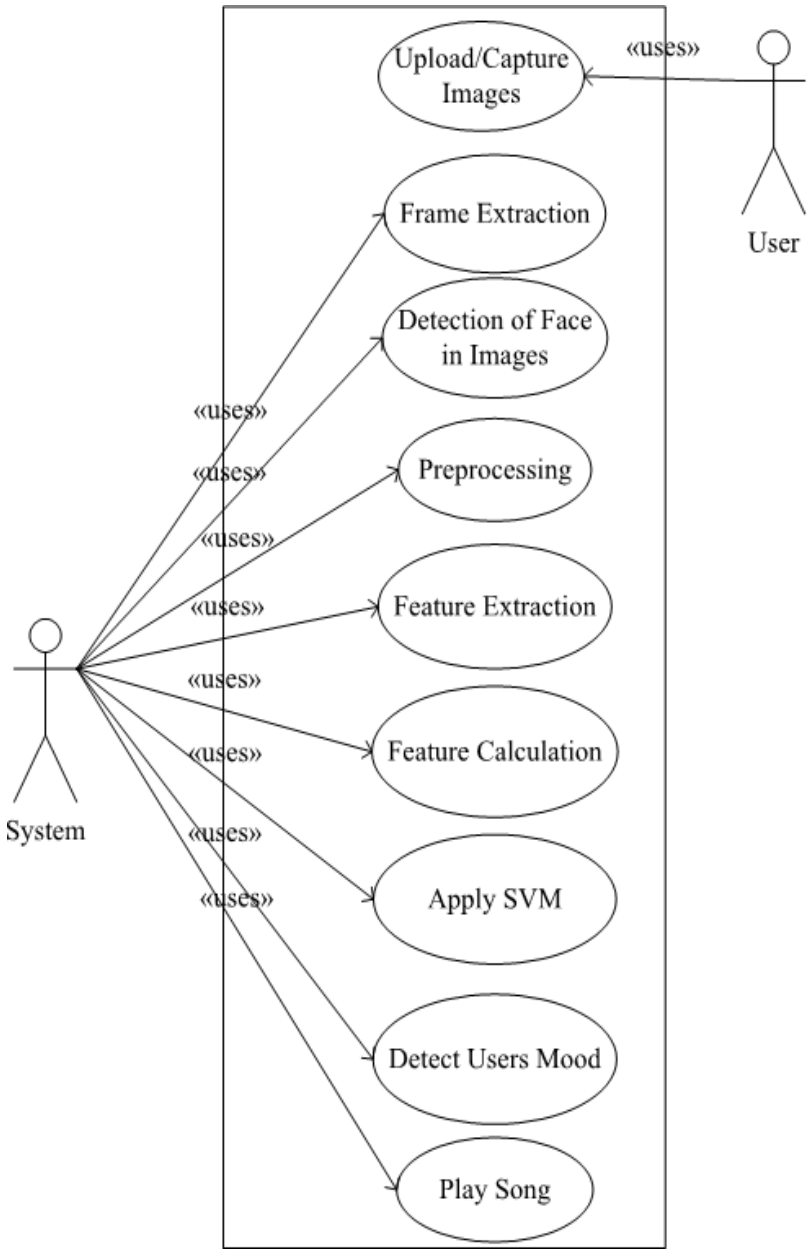


Figure 6: Use Case Diagram

Figure 5 depicts the use case diagram for the proposed system. The admin, who has the complete hold of the back end of the system, can do the importing of the dataset, pre-processing it, training a classification model, and storing it for user to use and don't have to code every time.

4.4 Activity Diagram

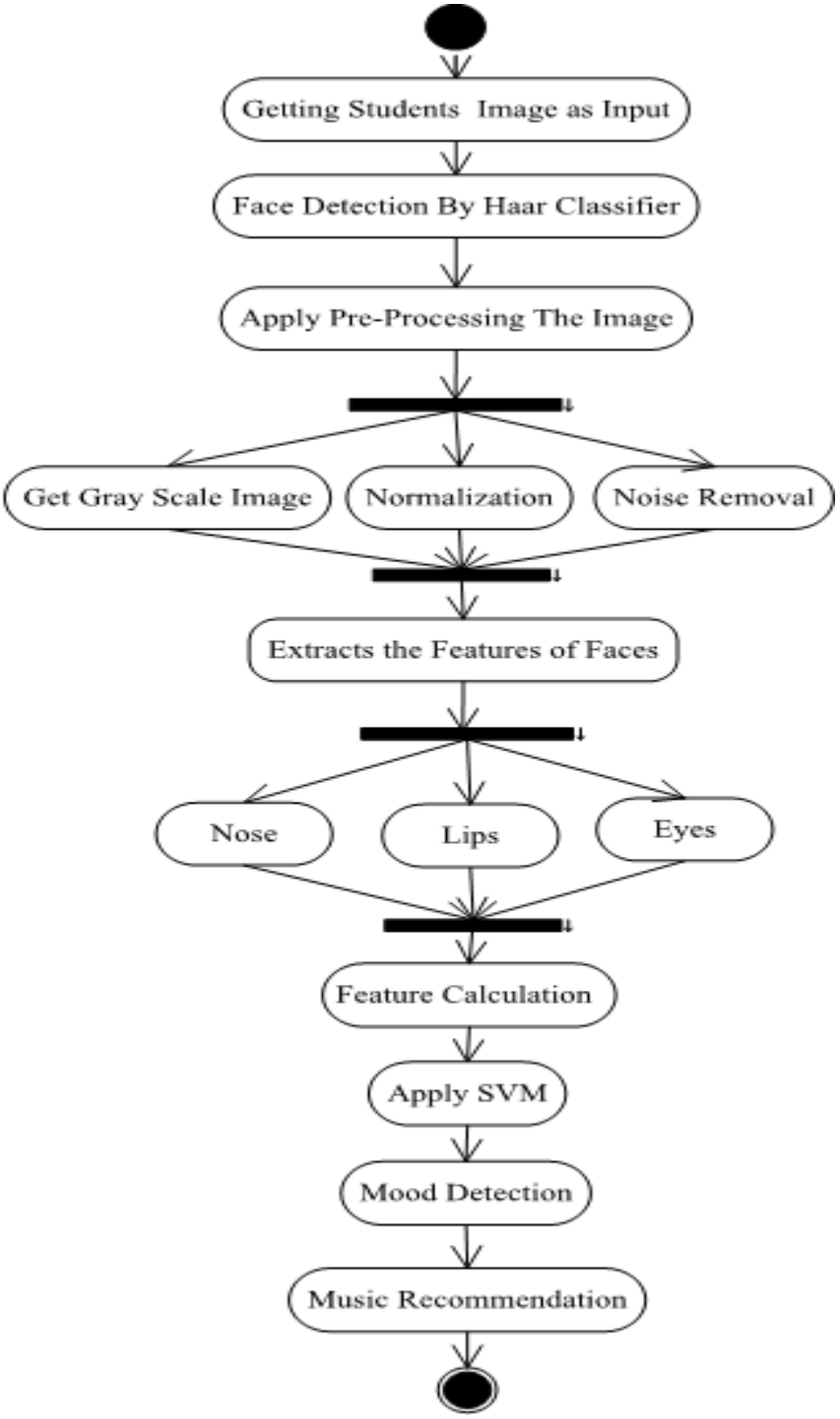


Fig 7. Activity Diagram

4.6. Algorithm and Methodology

As part of various experimentations, we intend to try out various algorithms and deep learning architectures. Each of them is briefly discussed in this section.

- Camera Capture Module
- Face Detection Using HAAR Classifier
- Emotion Detection Using SVM
- Music Recommendation Module

4.6.1 Elaborate Implementation Techniques

1) Haar cascade Classifier for Face Detection:

In this framework we involved Haar classifier calculation for face identification when one of these elements is found, the calculation permits the face contender to pass to the following phase of recognition. A face competitor is a rectangular part of the first picture called a sub-window. By and large these sub-windows have a proper size (regularly 24×24 pixels). This Sub-window is regularly scaled to acquire a wide range of size faces.

The calculation examines the whole picture with this window and signifies each separate area a face up- and-comer. The calculation involves a basic picture to deal with Haar highlights of a face competitor in consistent time. It utilizes a course of stages which is utilized to kill non-face applicants rapidly. Each stage comprises of various Haar highlights. Each component is characterized by a Haar include classifier. The Haar include classifiers create a result which would then be able to be given to the stage comparator. The stage comparator aggregates the results of the Haar include classifiers and contrasts this worth and a phase edge to decide whether the stage ought to be passed. Assuming that all stages are passed the face applicant is closed to be a face.

A) Haar Feature Classifier:

The Haar feature uses the rectangular value to calculate the feature value. The Haar feature section multiplies the weight of each rectangle by its location and the effects are added together. Several Haar feature dividers build the stage. The stage template incorporates all the effects of the Haar feature stage and compares this summary to the stage limit. Each stage does not have a set number of Haar features. Depending on the training data parameters each category may have a different number of Haar features.

B) Haar Features:

The haar features are made of two or three rectangles. Face candidates are scanned and searched for Haar features of the current stage. Each element of Haar has a value calculated by replacing each rectangle, multiplying each by its weight, and summarizing the results.

2) Emotion DetectionUsing SVM

Support Vector Machine (SVM)

- SVM is a flexible segment that can be divided into two categories. SVM divides the test image in the class at a high level that reaches the point of training.
- The SVM training algorithm has developed a model that predicts that the test image falls into one class or another.
- SVM requires extensive training data to determine the decision limit and computer costs are very high even though we use single (pre-station) acquisition.
- SVM is a partition algorithm that attempts to find a plane separator that minimizes errors in invisible patterns.

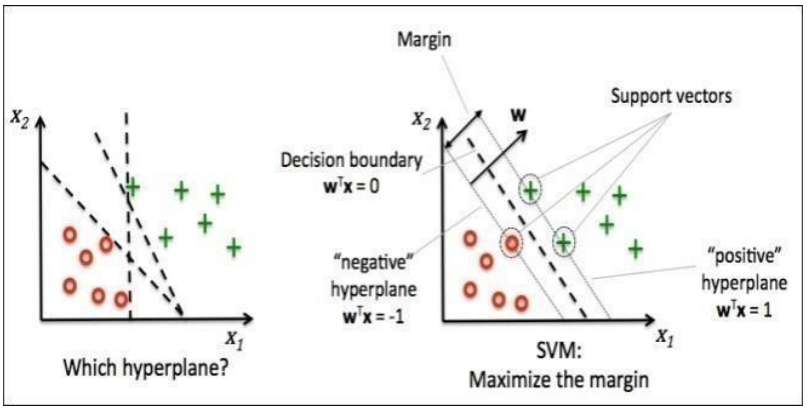


Figure 8 : Separating Hyper Plane To Reduce Error

- The information which can't be recognized the information is planned to high-layered property space where they can be isolated by a hyper plane. This projection is all around performed through parts.

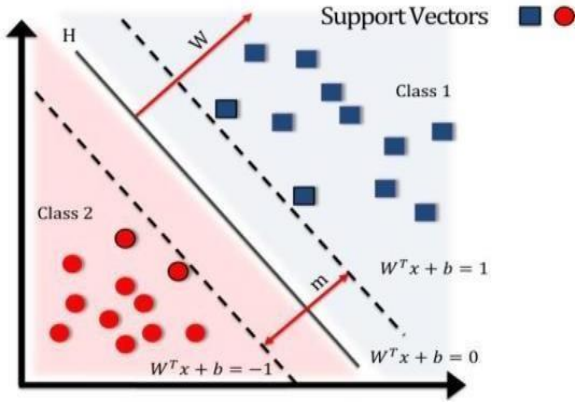


Figure 9: Dividing the Hyper Plane by Equation

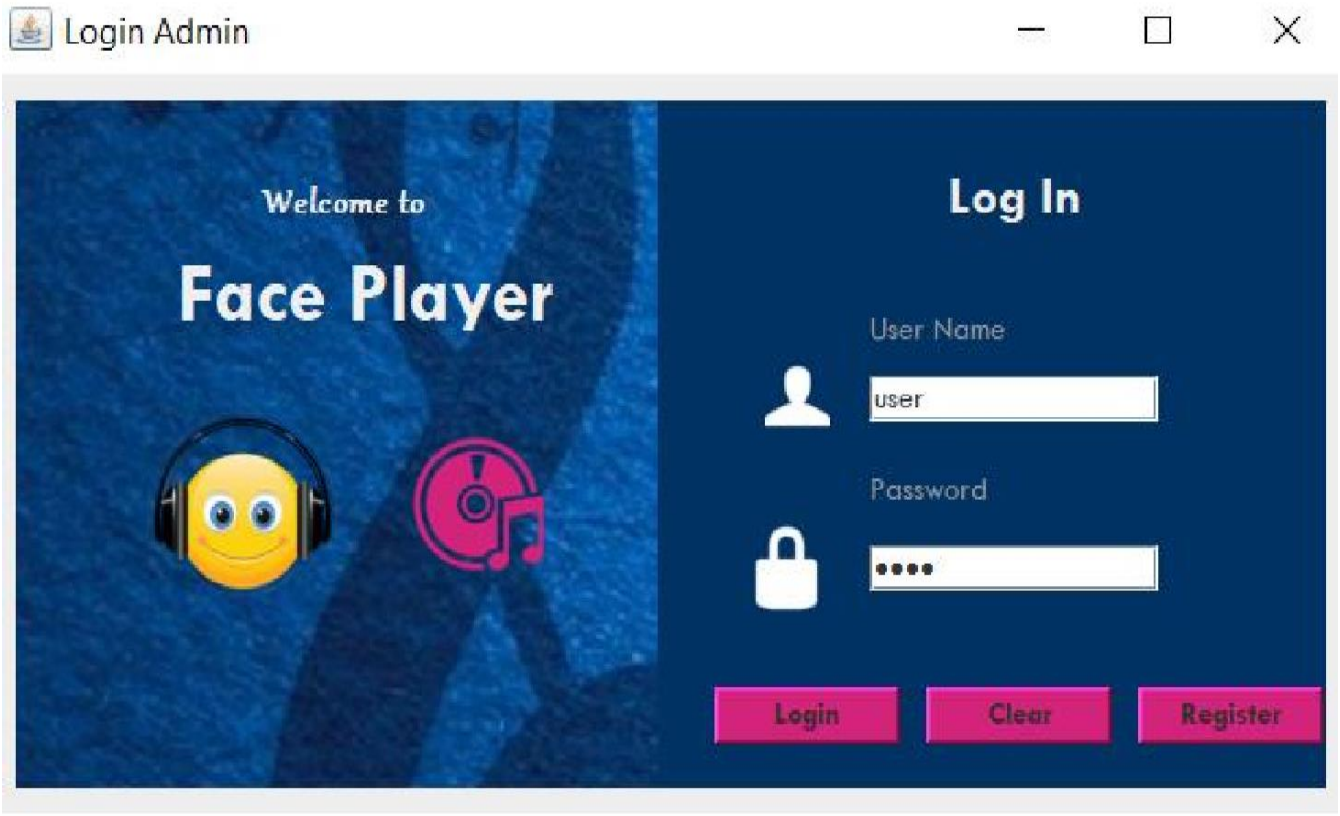
- If preparing set of tests and the same resultant qualities {-1, 1}. So SVM mean to get the best isolating hyper plane indicated by the situation WTx+b that utilize the distance between the two classes as displayed in above figure.

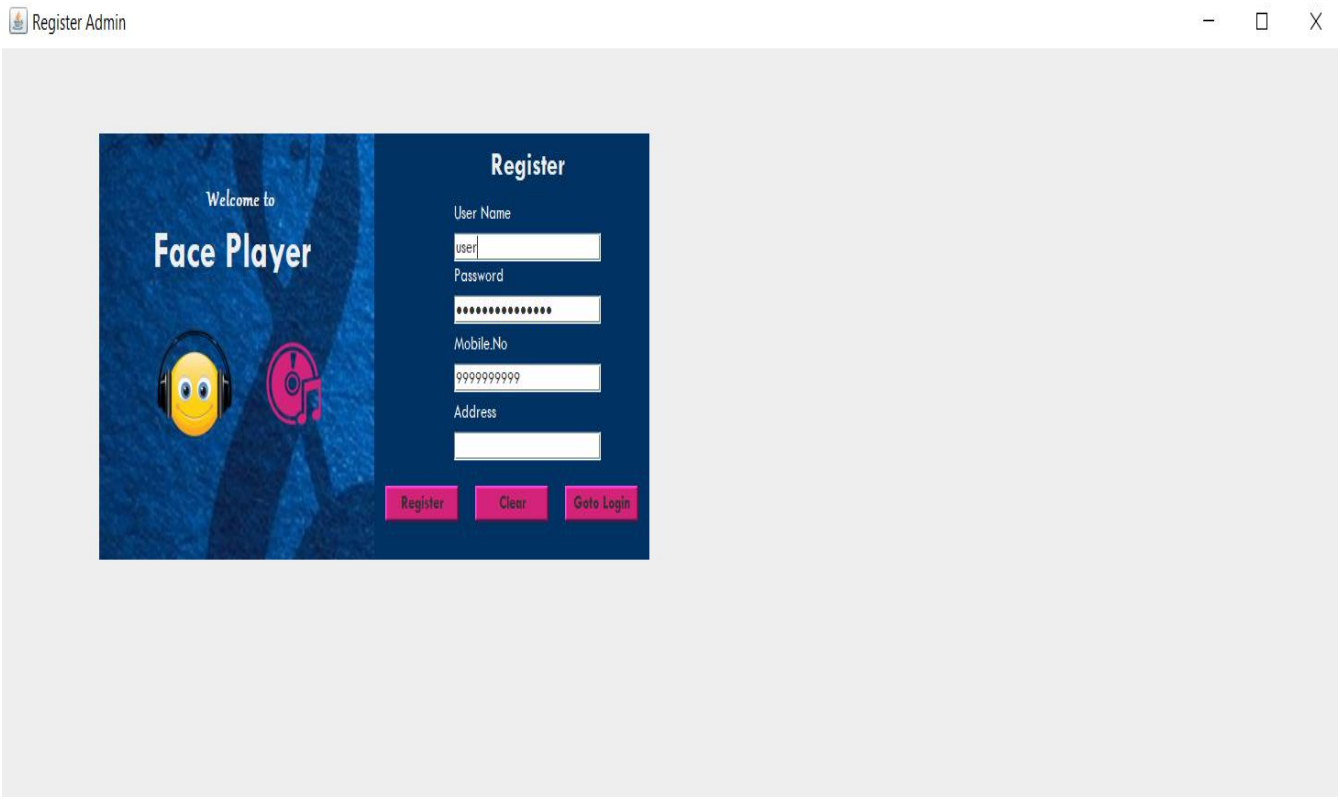
3) Emotions Detection and Music recommendation:

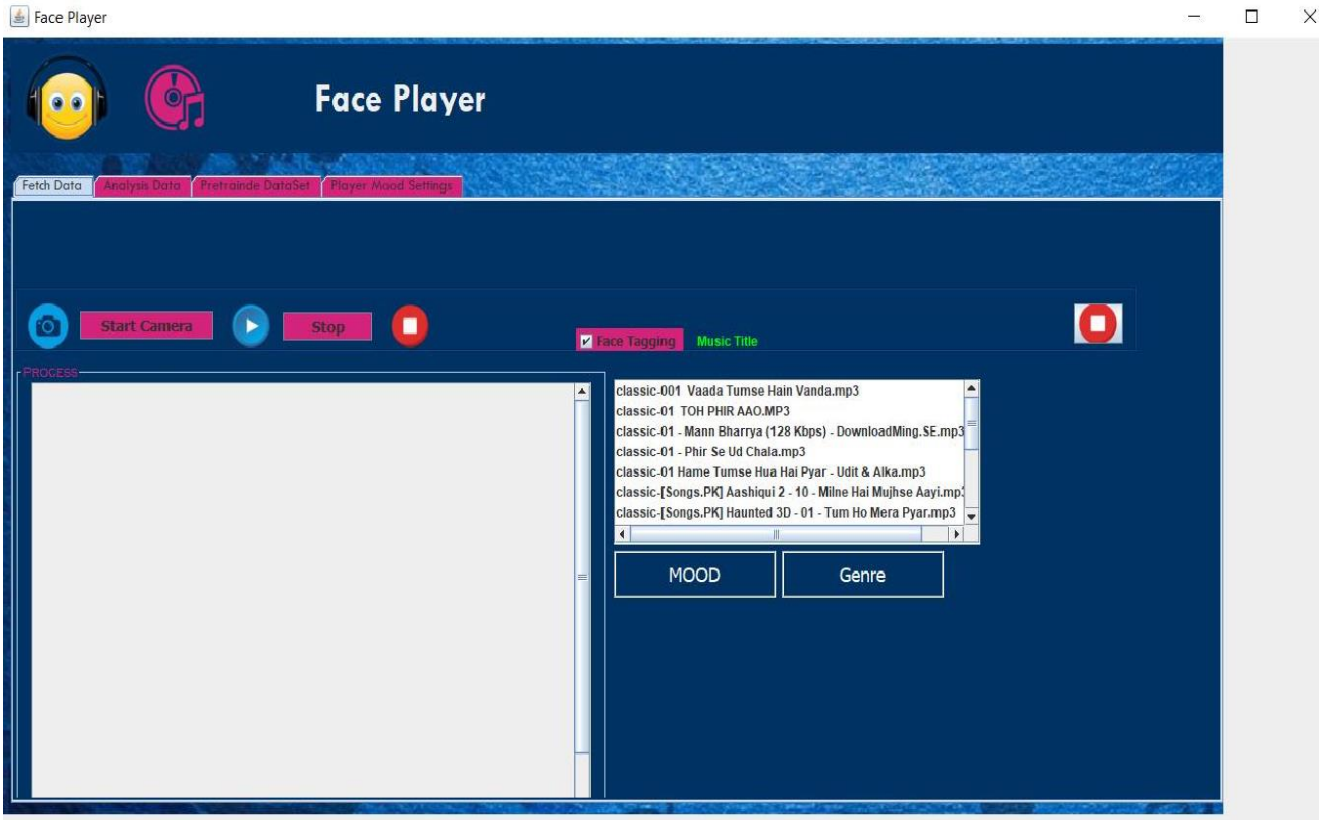
By applying SVM classifier on the removed highlights the feeling Happy, Neutral, Sad are distinguished. In view of the client's state of mind like dismal, furious, party loose, cheerful the specific tune from the playlist is played.

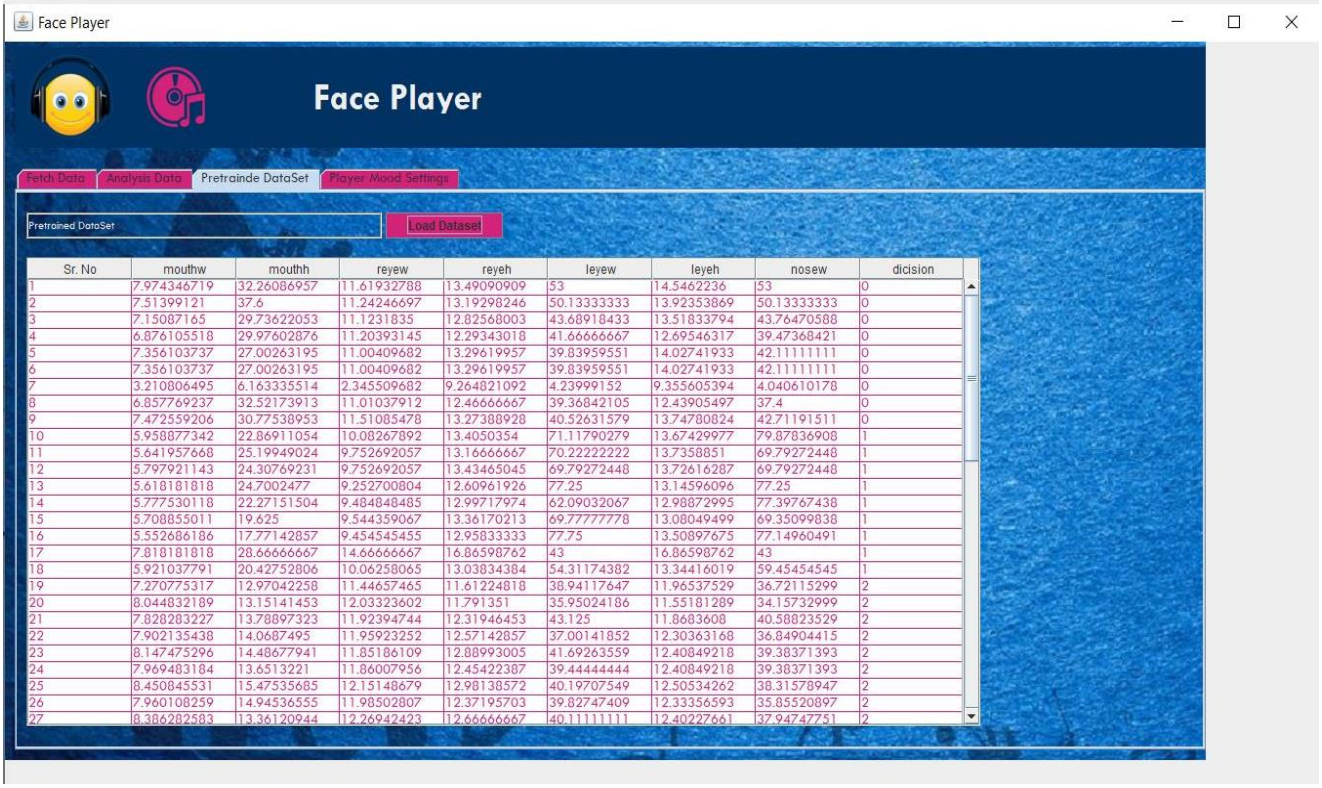
CHAPTER V

5.1 RESULTS OF EXPERIMENTS









Sr. No	mouthw	mouthh	reyew	reyeh	leyew	leyeh	nosew	dicision
1	7.974346719	32.26086957	11.61932788	13.49090909	53	14.5462236	53	0
2	7.51399121	37.6	11.24246697	13.19298246	50.13333333	13.92353869	50.13333333	0
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10	5.958877342	22.86911054	10.08267892	13.4050354	71.11790279	13.67429977	79.87836908	1
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12	5.797921143	24.30769231	9.752692057	13.43465045	69.79272448	13.72616287	69.79272448	1
13	5.618181818	24.7002477	9.252700804	12.60961926	77.25	13.14596096	77.25	1
14	5.777530118	22.27151504	9.484848485	12.99717974	62.09032067	12.98872995	77.39767438	1
15	5.708855011	19.625	9.544359067	13.36170213	69.77777778	13.08049499	69.35099838	1
16	5.552686186	17.77142857	9.454545455	12.95833333	77.75	13.50897675	77.14960491	1
17	7.818181818	28.66666667	14.66666667	16.86598762	43	16.86598762	43	1
18	5.921037791	20.42752806	10.06258065	13.03834384	54.31174382	13.34416019	59.45454545	1
19	7.270775317	12.97042258	11.44657465	11.61224818	38.94117647	11.96537529	36.72115299	2
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23	8.147475296	14.48677941	11.85186109	12.88993005	41.69263559	12.40849218	39.38371393	2
24	7.969483184	13.6513221	11.86007956	12.45422387	39.44444444	12.40849218	39.38371393	2
25	8.450845531	15.47535685	12.15148679	12.98138572	40.19707549	12.50534262	38.31578947	2
26	7.960108259	14.94536555	11.98502807	12.37195703	39.82747409	12.33356593	35.85520897	2
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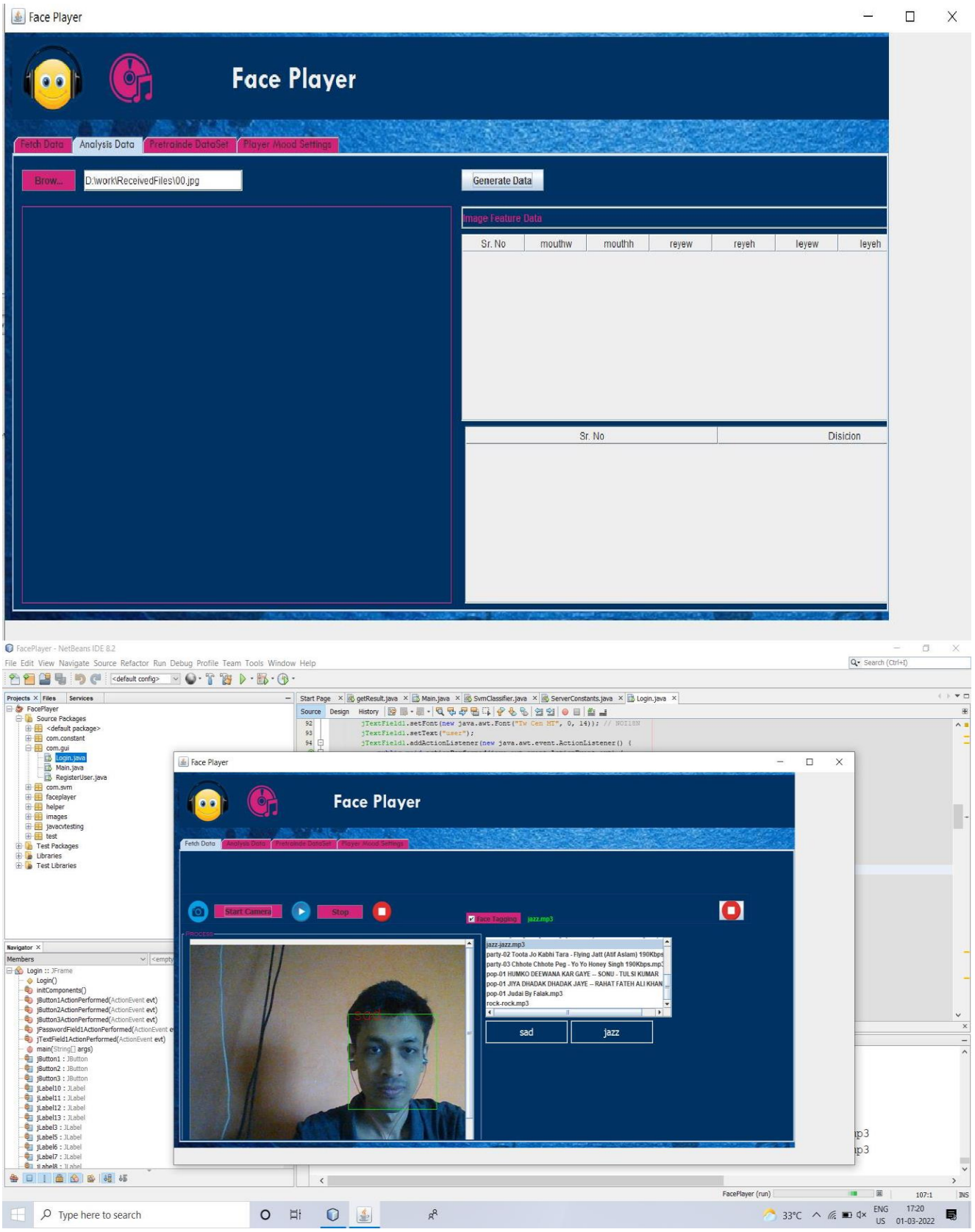
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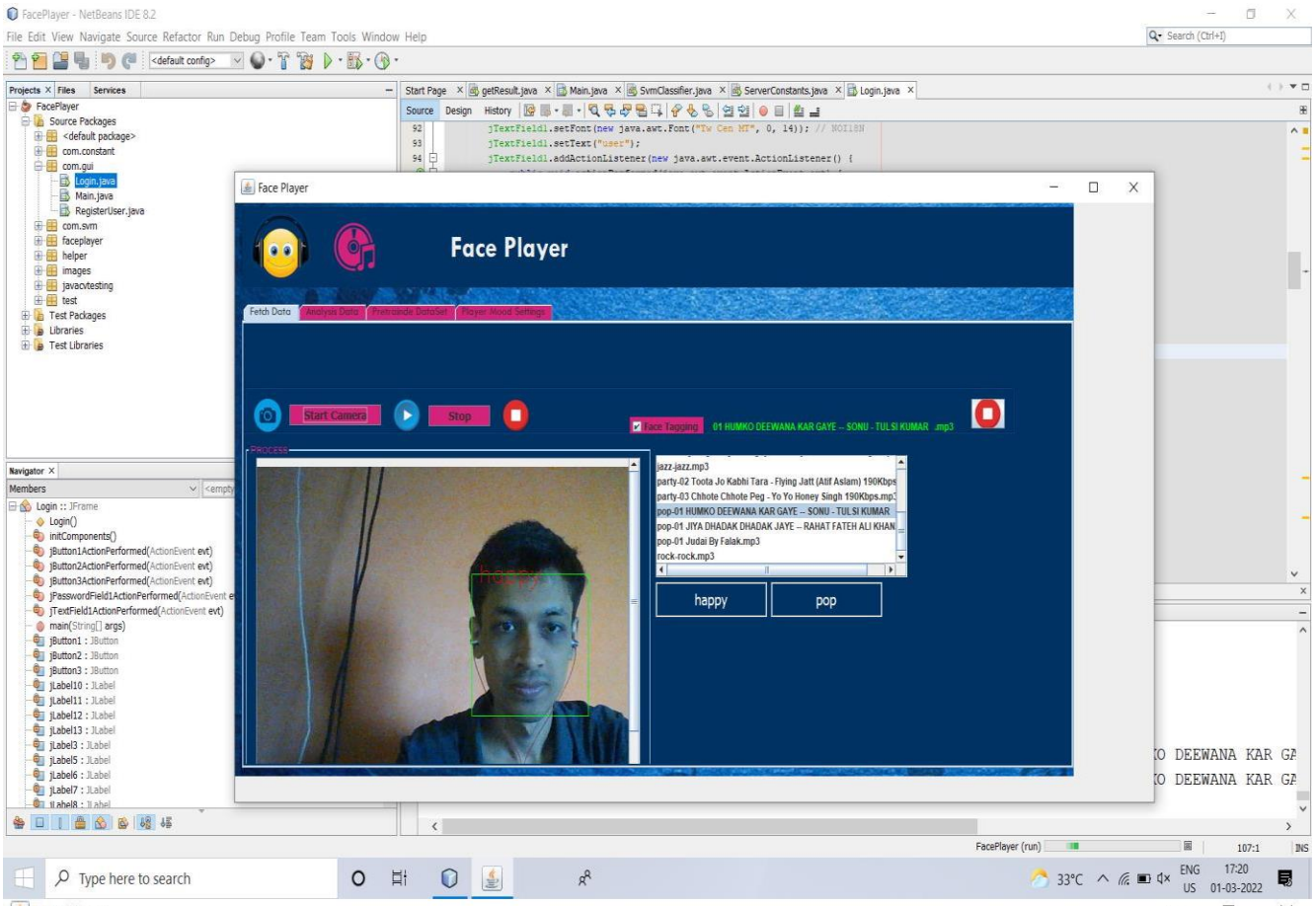
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jazz-jazz.mp3
party-02 Toota Jo Kabhi Tara - Flying Jatt (Atif Aslam) 190Kbps
party-03 Chhote Chhote Peg - Yo Yo Honey Singh 190Kbps.mp3
pop-01 HUMKO DEEWANA KAR GAYE -- SONU - TULSI KUMAR
pop-01 JIYA DHADAK DHADAK JAYE -- RAHAT FATEH ALI KHAN
pop-01 Judai By Falak.mp3
rock-rock.mp3
happy
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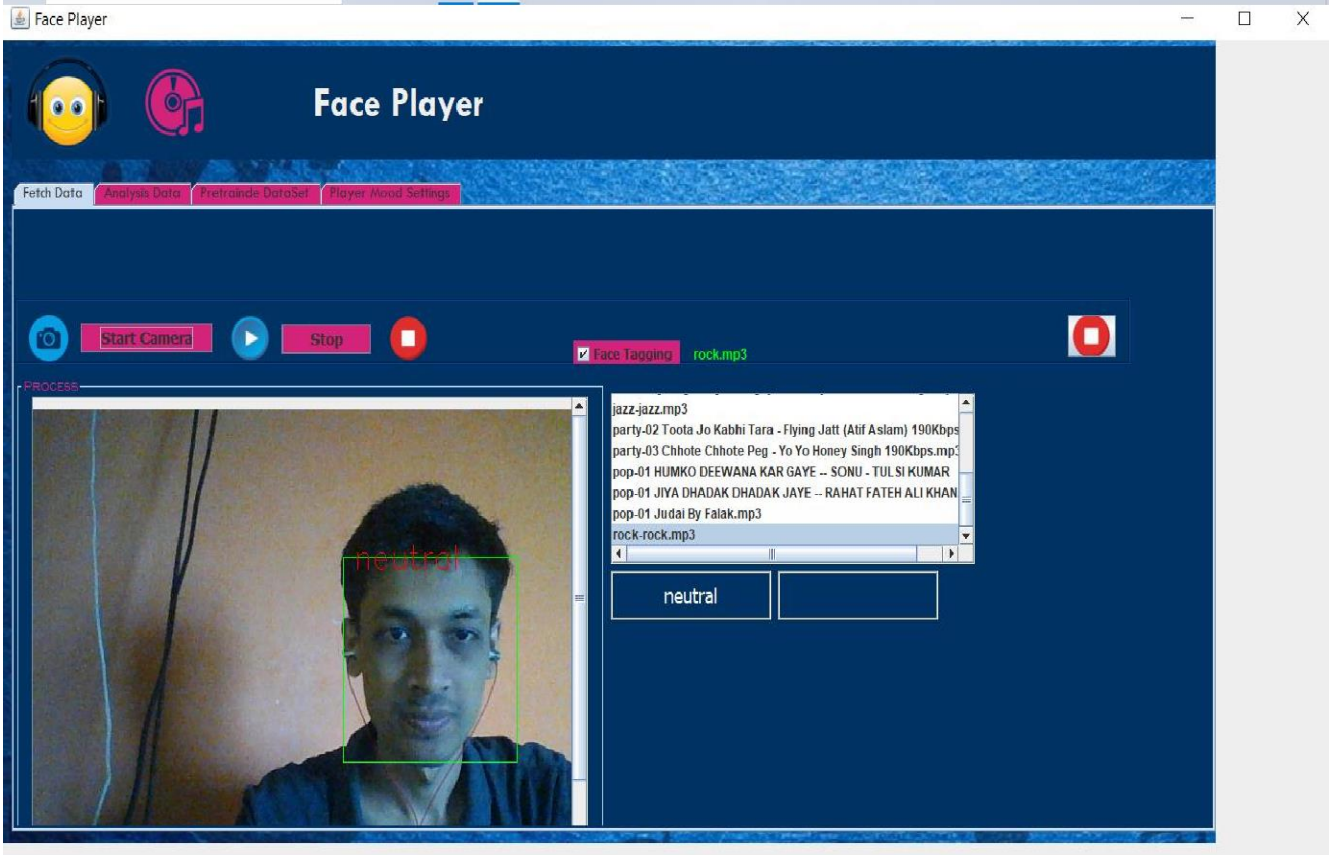
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party-03 Chhote Chhote Peg - Yo Yo Honey Singh 190Kbps.mp3
pop-01 HUMKO DEEWANA KAR GAYE -- SONU - TULSI KUMAR
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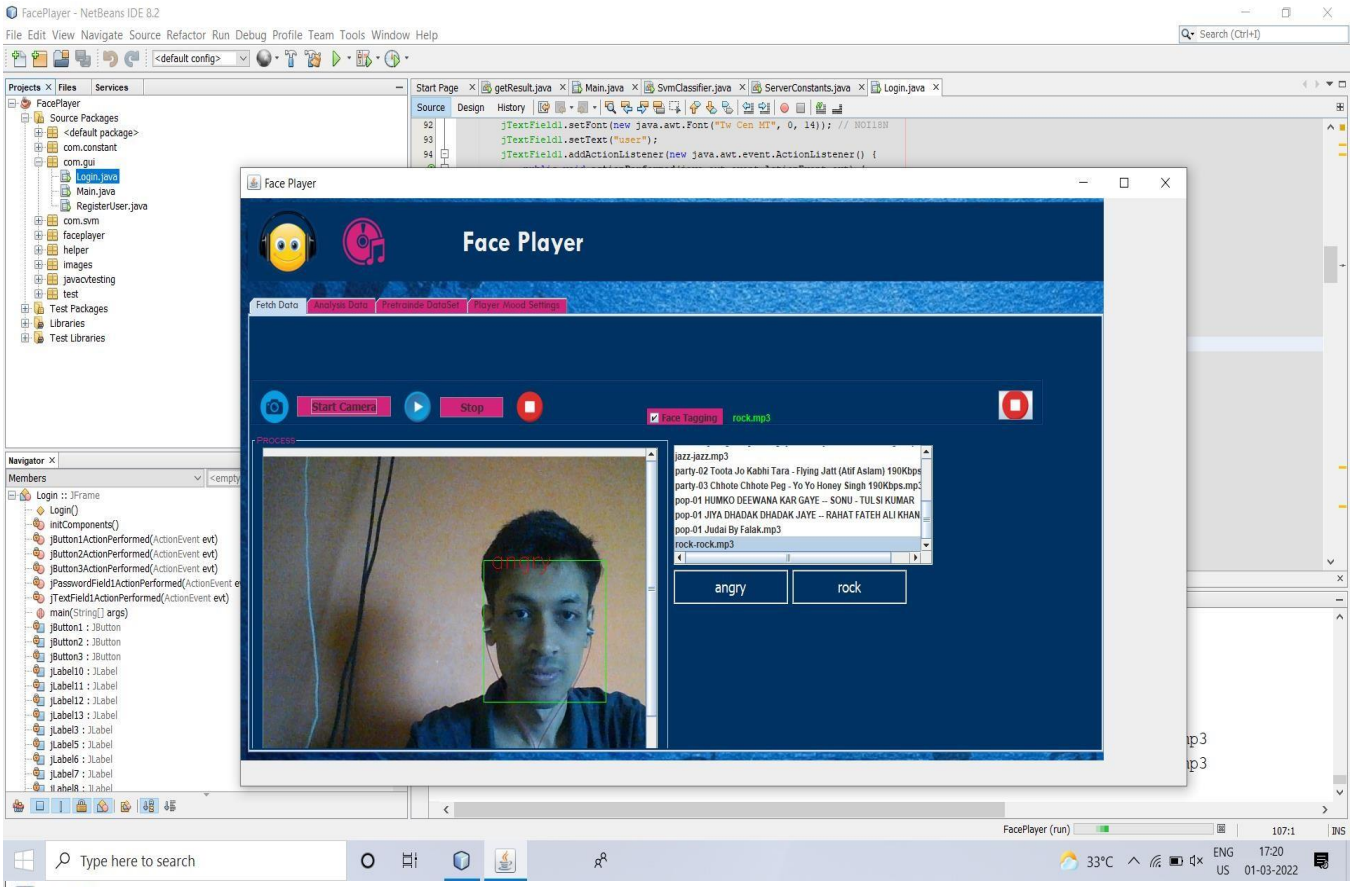
pop-01 Judai By Falak.mp3
rock-rock.mp3
neutral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Stop
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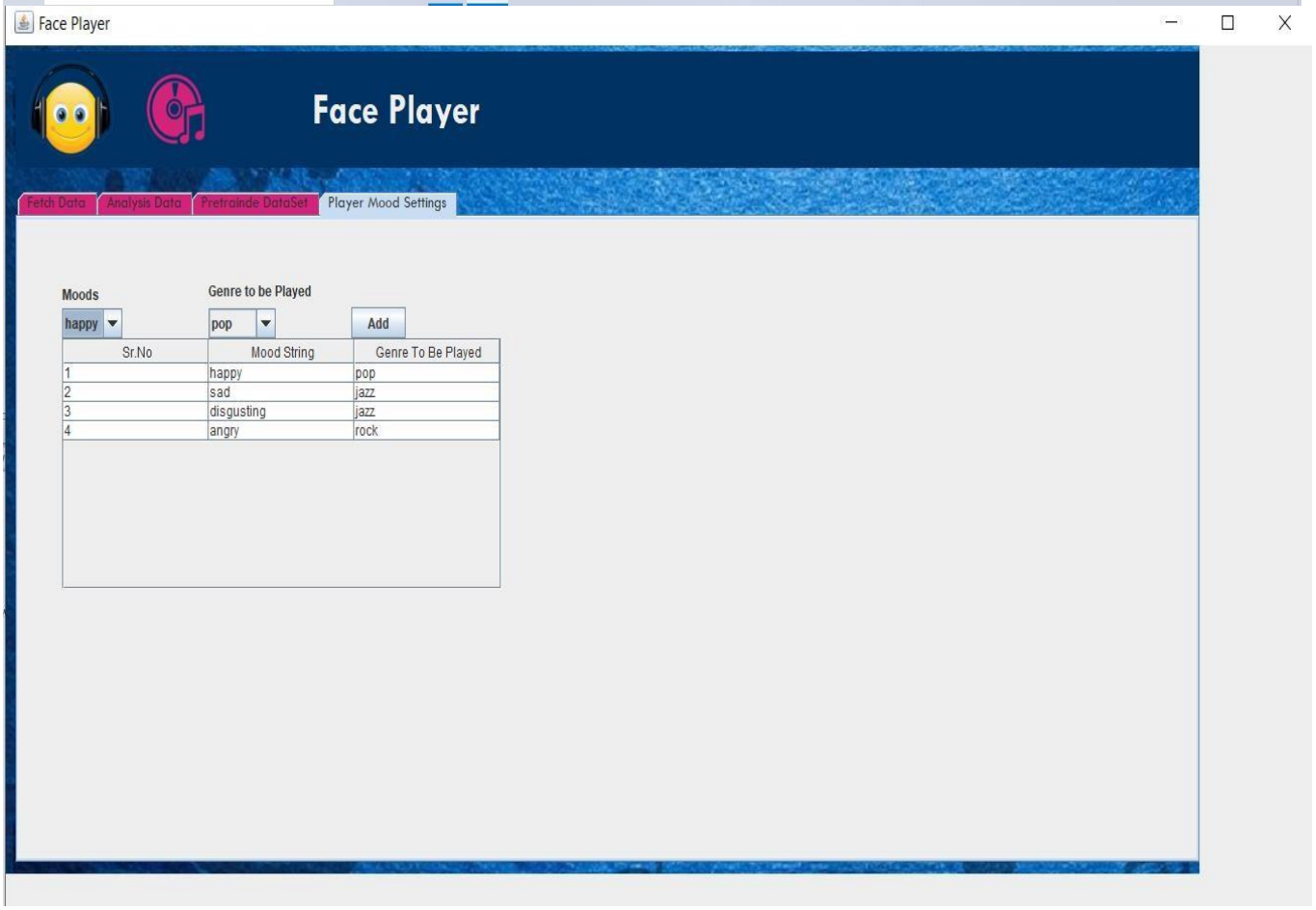
Face Player
Face Player
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Analysis Data
Pretrainde DataSet
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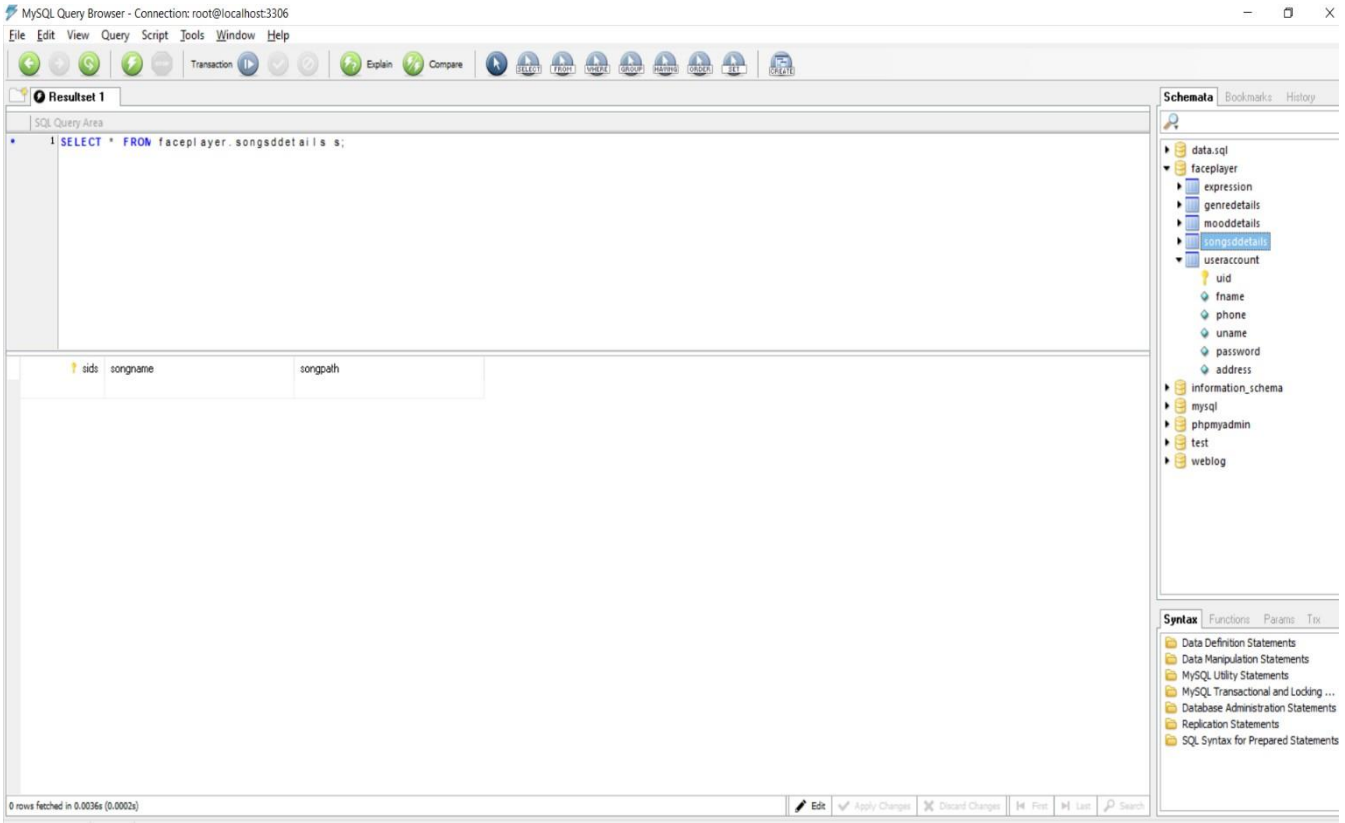
Moods
happy
Genre to be Played
pop
Add
Sr.No
Mood String
Genre To Be Played
1
happy
pop
2
sad
jazz
3
disgusting
jazz
4
angry
rock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File Edit View Query Script Tools Window Help
Resultset 1
SQL Query Area
1 SELECT * FROM faceplayer.songsddetails s;
sids songname songpath
0 rows fetched in 0.0036s (0.0002s)
Schemata Bookmarks History
data.sql
faceplayer
expression
genredetails
mooddetails
songsddetails
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weblog
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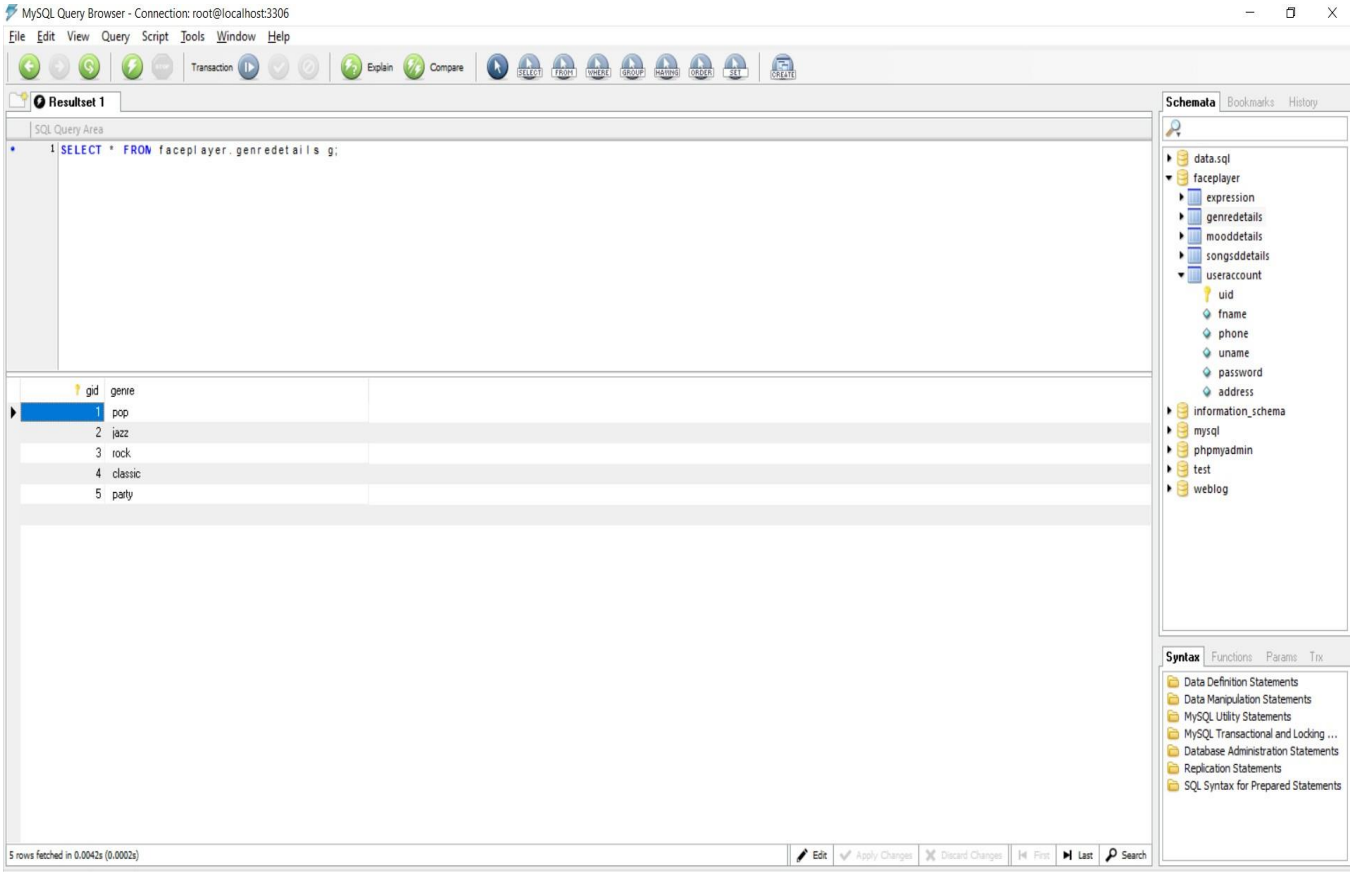
MySQL Utility Statements
MySQL Transactional and Locking ...
Database Administration Statements
Replication Statements
SQL Syntax for Prepared Statements


MySQL Query Browser - Connection: root@localhost:3306
File Edit View Query Script Tools Window Help
Resultset 1
SQL Query Area
1 SELECT * FROM faceplayer.genredetails g;
gid genre
1 pop
2 jazz
3 rock
4 classic
5 party
5 rows fetched in 0.0042s (0.0002s)
Schemata Bookmarks History
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faceplayer
expression
genredetails
mooddetails
songsddetails
useraccount
uid
fname
phone
uname
password
address
information_schema
mysql
phpmyadmin
test
weblog
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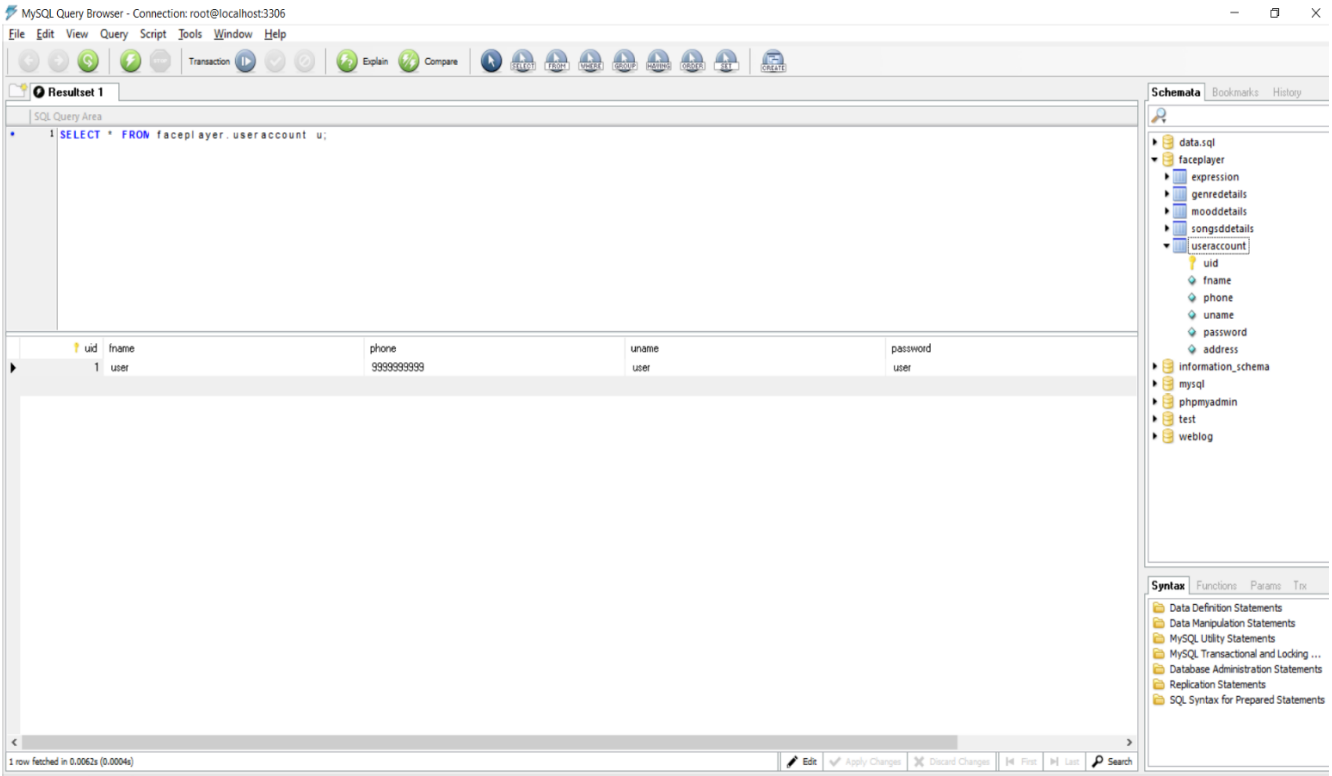
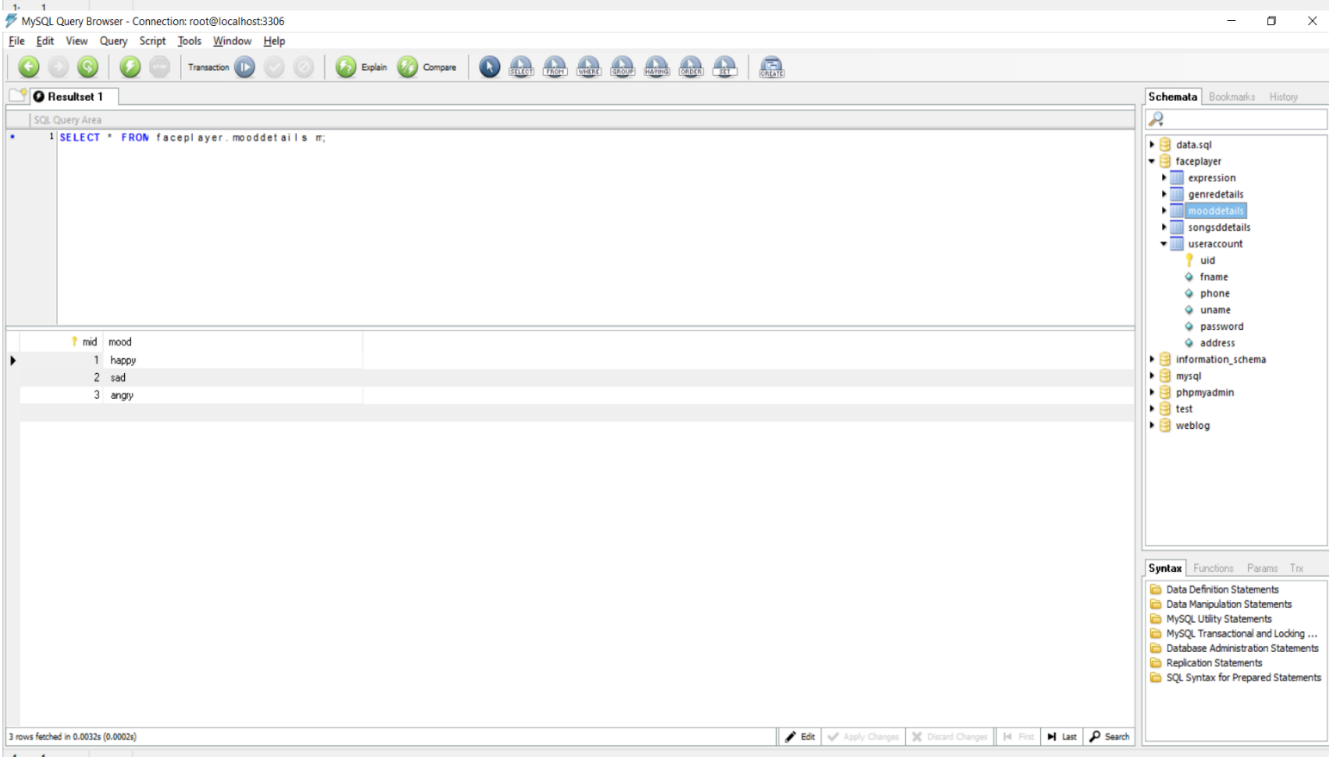
SQL Syntax for Prepared Statements


MySQL Query Browser - Connection: root@localhost:3306
File Edit View Query Script Tools Window Help
Resultset 1
SELECT * FROM faceplayer.useraccount u;
uid fname phone uname password
1 user 9999999999 user user
1 row fetched in 0.0062s (0.0004s)
Schemata Bookmarks History
data.sql
faceplayer
expression
genredetails
mooddetails
songsddetails
useraccount
uid
fname
phone
uname
password
address
information_schema
mysql
phpmyadmin
test
weblog
Syntax Functions Params Trx
Data Definition Statements
Data Manipulation Statements
MySQL Utility Statements
MySQL Transactional and Locking ...
Database Administration Statements
Replication Statements
SQL Syntax for Prepared Statements


MySQL Query Browser - Connection: root@localhost:3306
File Edit View Query Script Tools Window Help
Resultset 1
SELECT * FROM faceplayer.mooddetails m;
mid mood
1 happy
2 sad
3 angry
3 rows fetched in 0.0032s (0.0002s)
Schemata Bookmarks History
data.sql
faceplayer
expression
genredetails
mooddetails
songsddetails
useraccount
uid
fname
phone
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weblog
Syntax Functions Params Trx
Data Definition Statements
Data Manipulation Statements
MySQL Utility Statements
MySQL Transactional and Locking ...
Database Administration Statements
Replication Statements
SQL Syntax for Prepared Statements

5.2 TESTING

5.2.1 Unit Case Testing

Unit testing is a component of test-driven development (TDD), a pragmatic methodology that takes a meticulous approach to building a product by means of continual testing and revision. Unit testing is a software development process in which the smallest testable parts of an application, called units, are individually and independently scrutinized for proper operation. There are two types of unit testing manual testing and automated testing. In this we have used manual testing.

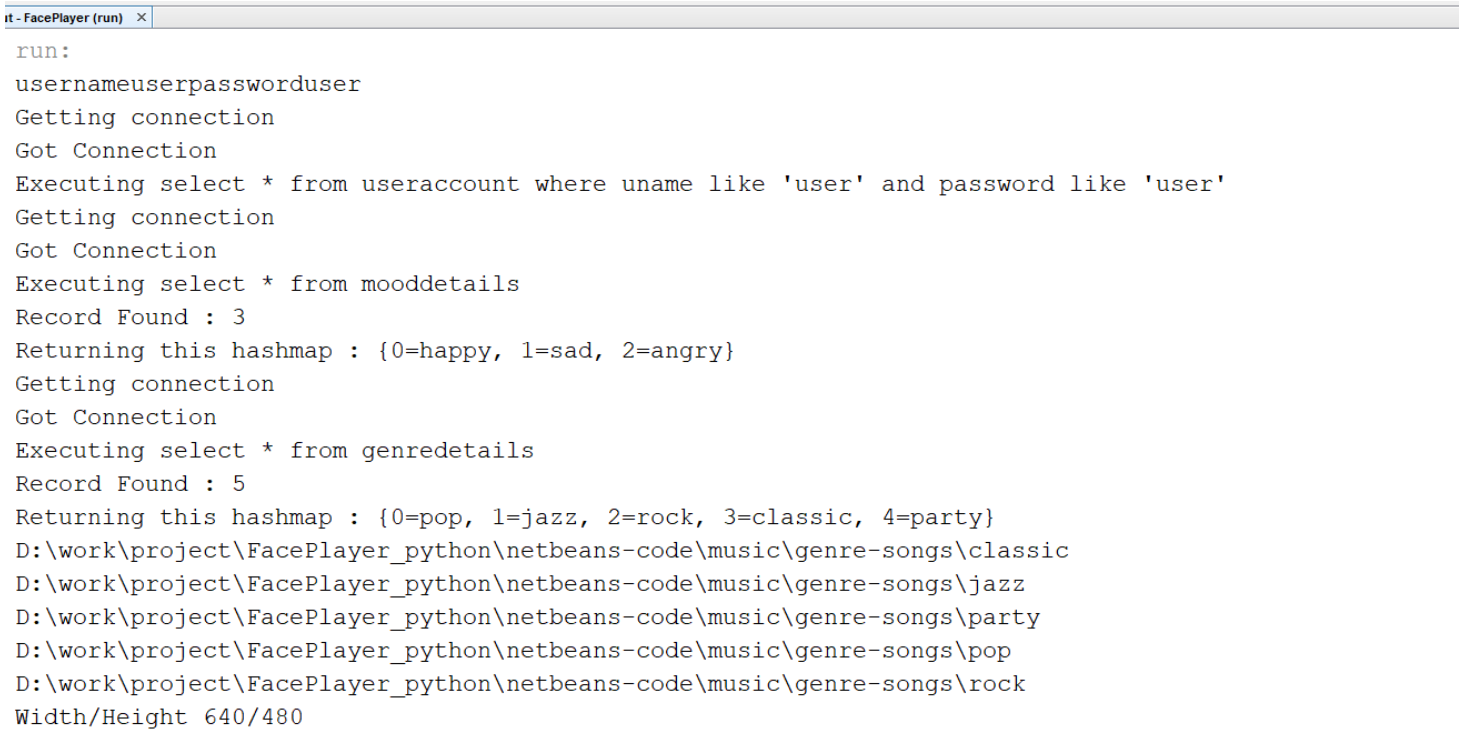

Fig 11 A. Login and Face regognition Testing

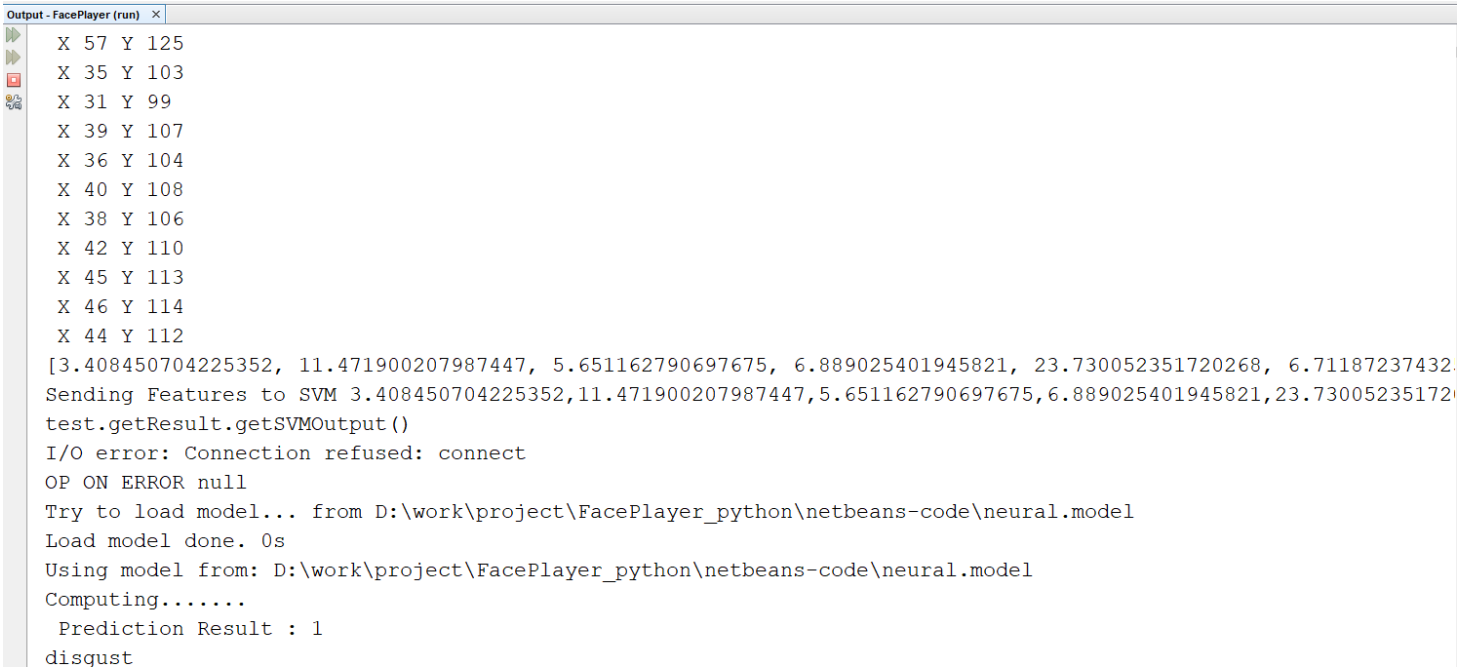

Fig 11 B. Emotion Prediction Testing

5.2.2 Test Cases

Test Case Id	Description	Test Case I/p	Actual Output	Expected Output	Result
001	Sign Up: Same Username / Email with registration	Register with same username / email	User can't Signup	User can't Signup	Pass
002	Sign in: Check When passing a correct username and invalid password	1. Enter valid username 2. Enter incorrect password 3. Click on Login Button	User should not log in and should show proper error message	User should not log in and should show proper error message	Pass

003	Sign in: Required Fields Check the required fields by not filling any data.	1. Enter invalid username 2. Enter correct password 3. Click on Login Button.	User should not log in and should show proper error message	User should not log in and should show proper error message	Pass
004	Face Detection	1. When we turn on the camera the image frame passing the threshold value is recognized as face.	Face Detected	Face Detected	Pass
005	Emotion Detection	1. Emotion detection using svm based on feature extracted by haar cascade	Emotion Detected	Emotion Detected	Pass

CHAPTER VI

6.1 CONCLUSION

This project gives us extraordinary advancement in the field of AI/ML innovation. Frame of mind Play rhythm is based on emotions of the client that satisfies to play the music in view of his/her feelings, whether it's happy/sad/neutral. Along these lines, absolutely our work plans is to develop a player which depends on client's need and it serves to revive in the event of available time or relaxation time that we need to hear music in the view of our ongoing circumstance.

6.2 LIMITATIONS

- The music playlist's song count can be increased up to a particular point.
- The photograph was taken in poor lighting.
- Image is hazy.
- If the user wishes to play a song in a different mood or genre, he must again input his facial expression, which is a time-consuming procedure.
- Emotion is getting detected when no face is in front of camera

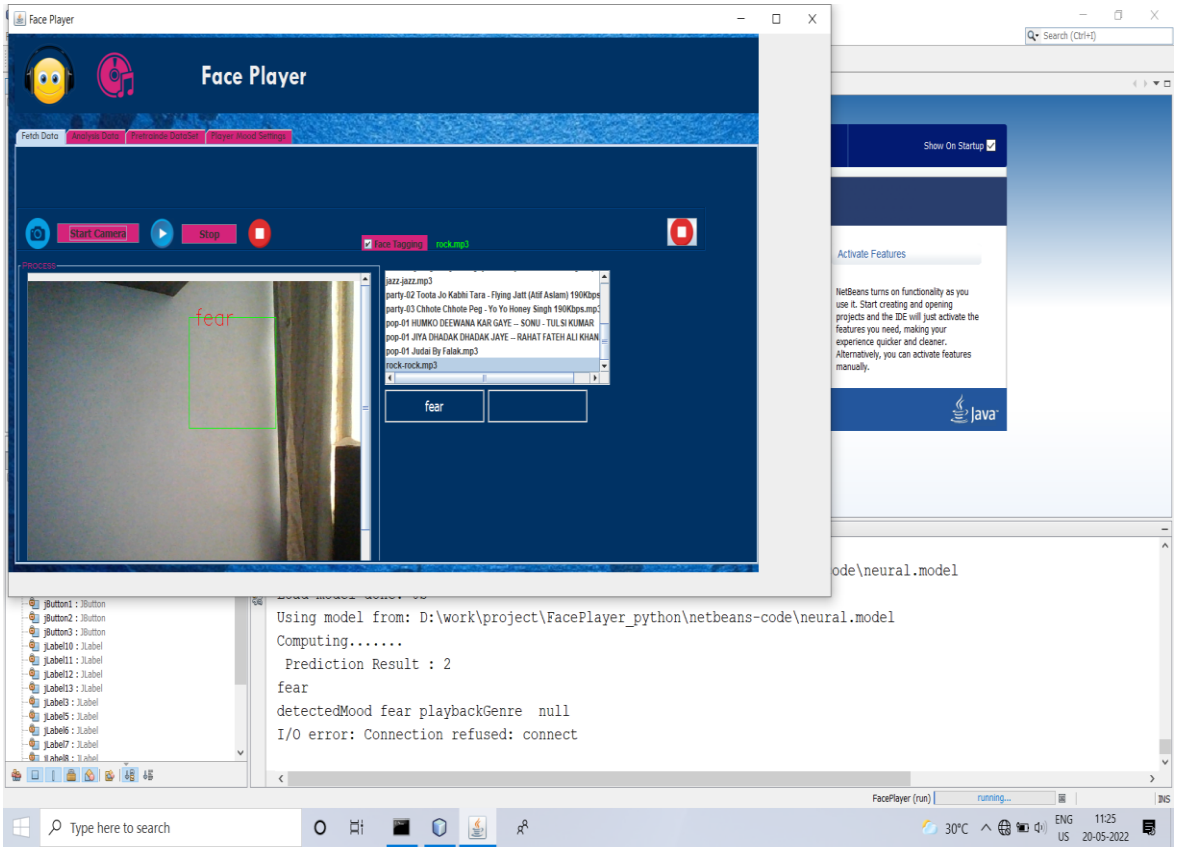

Fig 12. Limitation

6.3 FUTURE SCOPE

This system, does have scope for improvement in the future. There are various aspects of the application that can be modified to produce better results, and a smoother overall experience for the user.

- We can extend the limit of songs in the playlist.
- We can minimize the time by speeding up the whole process of capturing image and processing song corresponding to that.
- Emotion is getting detected when no face is in front of camera this can be improved with better accuracy algorithm

CHAPTER VII

7. REFERENCE

List all the material used from various sources for making this project proposals

1. Ramya Ramanathan ; Radha Kumaran ; R Ram Rohan ; Rajat Gupta ; Vishalak- shi Prabhu “An Intelligent Music Player Based on Emotion Recognition”, 2017 2nd International Conference on Computational Systems and Information Tech- nology for Sustainable Solution (CSITSS).

2. Shlok Gilda,1Husain Zafar, Chintan Soni and Kshitija Waghurdekar“Smart Mu- sic Player Integrating FacialEmotion Recognition and MusicMood Recommenda- tion”, 2017 IEEE.

3. Yading Song, Simon Dixon, Marcus Pearce, “EVALUATION OF MUSICAL FEATURES FOR EMOTION CLASSIFICATION”, University of London, ISMR, 2012.

4. Krittrin Chankuptarat ; Raphatsak Sriwatanaworachai ; Supannada Chotipant ,“Emotion-Based Music Player”, 2019 5th International Conference on Engineer- ing, Applied Sciences and Technology (ICEAST)

5. Aayush Bhardwaj ; Ankit Gupta ; Pallav Jain ; Asha Rani ; Jyoti Yadav “Classi- fication of human emotions from EEG signals using SVM and LDA Classifiers”, 2015 2nd International Conference on Signal Processing and Integrated Networks (SPIN)

6. F. Abdat ; C. Maaoui ; A. Pruski ,“Human-Computer Interaction Using Emotion Recognition from Facial Expression”, 2011 UKSim 5th European Symposium on Computer Modeling and Simulation.

CHAPTER VIII

8. APPENDICES

8.1 BASE PAPERS

- Facial Expression Recognition with Active Local Shape Pattern and Learned-Size Block Representations

  Md Tauhid Bin Iqbal*, Member, IEEE, Byungyong Ryu*, Ad´ın Ram´ırez Rivera, Member, IEEE, Farkhod Makhmudkhujaev, Oksam Chae, Member, IEEE, and Sung-Ho Bae, Member, IEEE

  Link : [https://ieeexplore.ieee.org/document/9095366]

- EMO-MUSIC(Emotion based Music player)

  Sarvesh Pal, Ankit Mishra, Hridaypratap Mourya, Supriya Dicholkar

  Link : [https://www.irjet.net/archives/V7/i2/IRJET-V7I2275.pdf]

8.2 RESEARCH PAPER PUBLICATION

- “Frame of mind- Play Rhythm based on Emotions”

  Author’s : Chandrakantesh More, Yogesh Sanap, Tushar Vispute

  Guide : Prof. Mr. J. K. Kamble

  Link :

  [https://www.ijser.org/onlineResearchPaperViewer.aspx?Frame_of_mind_play_rhythm_based_on_emotions.pdf]

International Journal of Scientific & Engineering Research Volume 13, Issue 4, April-2022
ISSN 2229-5518

FRAME OF MIND - PLAY RHYTHM BASED ON EMOTIONS

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***Abstract*— In this paper, we propose an approach to Computer vision techniques which are used in many fields such as traffic control, event monitoring, marketing, healthcare field, quality control, military technology, etc. One of the sub-areas of computer vision is facial expression recognition. Human face acts as the main indicator for the behavioral and the emotional state of the individual. Facial expressions which can be classified as fear, happiness, joy, sadness, aggressiveness are recognizable with computer vision techniques. Here the concept of face recognition is used for detection of an individual's mood. The proposed system can recognize facial expressions from the user's face and recommend or play the song from the list accordingly.**

Keywords*— *Facial expressions, face recognition, detection of mood, recommend the song.

I. INTRODUCTION

Nowadays it has become necessary to identify the facial recognition of human which helps the organization as well as individual to recognize the emotions of a person. It can apply to all different places where recognition plays an important role in identifying the emotion.

Face emotion detection applications is quiet challenging task as face images may be affected by changes in the scene, such as pose variation, face expression, or illumination. Mood detection based on emotion is the one of the current topic in the various fields which provides solution to various challenges.

Music is a thing that enhancing an individual's life. Mood detection based on emotion is one of the current topics in the various fields which provide a solution to various challenges. Most of the music lover's users found themselves in a hectic situation when they do not find songs corresponding to their mood in the situation So there is a need for the system that can reduce human efforts of manually playing the song based on human mood.

II. RELATED WORK

Using traditional music players, a user had to manually browse through his playlist and select songs that would soothe his mood and emotional experience. The existing system contains functions such as Manual selection of Song and Music squares where user has to classify the songs manually according to particular emotions for only four basic emotions. Such features satisfy the user's basic requirements.

Disadvantages of Existing System:-

- It requires the user to manually select the songs.
- Randomly played songs may not match to the mood of the user.
- User has to classify the songs into various emotions and then for playing the songs user has to manually select a particular emotion.

Currently, there are many existing music player applications. Some of the interesting applications among them are:

- Saavan and Spotify -These application gives good user accessibility features to play songs and recommends user with other songs of similar genre.

- Moodfuse - In this application, user should manually enter mood and genre that wants to be heard and recommends the songs-list.

- Steromood - User should select his mood manually by selecting the moods from the list.

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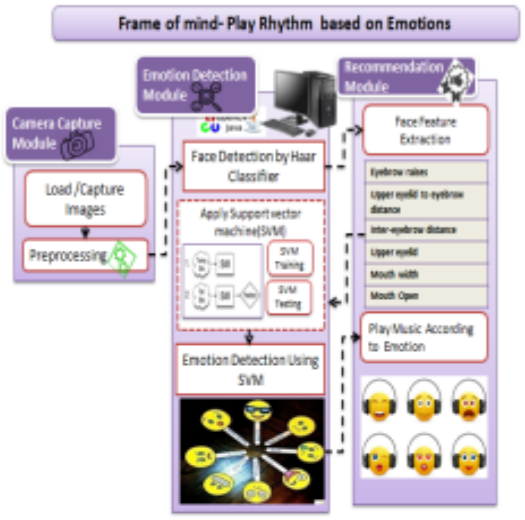
ISSN 2229-5518

III. PROPOSED METHODOLOGY



SYSTEM ARCHITECTURE

A. The Face Detection Using HAAR Classifier

1. Frame Extraction / Live Camera:
   User can upload/capture images using live camera on the application, application then extracts frames from the video. These frames are saved on local machine.
2. Face Detection:
   Apply the Haar cascade Classifier for the face detection in images.
3. Pre-Processing on images:
   Once we get the faces apply the preprocessing on images like noise removal, normalization etc.

a. RGB to Gray Scale Image:
   Convert the image into Gray scale by taking the average of the each pixel RGB.

b. Image Normalization:
   Normalization is a process that changes the range of pixel intensity values to avoid mental distraction or fatigue from the images.

c. Noise Removal:
   Removing errors in the image acquisition process that result in pixel values that do not reflect the true intensities of the real scene.

Haar cascade Classifier for Face Detection:

In this system we used Haar classifier algorithm for face detection when one of these features is found, the algorithm allows the face candidate to pass to the next stage of detection. A face candidate is a rectangular section of the original image called a sub-window. Generally these sub-windows have a fixed size (typically 24×24 pixels). This Sub-window is often scaled in order to obtain a variety of different size faces.

The algorithm scans the entire image with this window and denotes each respective section a face candidate. The algorithm uses an integral image in order to process Haar features of a face candidate in constant time. It uses a cascade of stages which is used to eliminate non-face candidates quickly. Each stage consists of many different Haar features. Each feature is classified by a Haar feature classifier. The Haar feature classifiers generate an output which can then be provided to the stage comparator. The stage comparator sums the outputs of the Haar feature classifiers and compares this value with a stage threshold to determine if the stage should be passed. If all stages are passed the face candidate is concluded to be a face.

a) Haar Feature Classifier

A Haar feature classifier uses the rectangle integral to calculate the value of a feature. The Haar feature classifier multiplies the weight of each rectangle by its area and the results are added together. Several Haar feature classifiers compose a stage. A stage comparator sums all the Haar feature classifier results in a stage and compares this summation with a stage threshold. Each stage does not have a set number of Haar features. Depending on the parameters of the training data individual stages can have a varying number of Haar features.

b) Haar Features:

Haar features are composed of either two or three rectangles. Face candidates are scanned and searched for Haar features of the current stage. Each Haar feature has a value that is calculated by taking the area of each rectangle, multiplying each by their respective weights, and then summing the results.

B. Emotion Detection Using SVM

4.Feature Extraction
   A SVM consists of an input and an output layer. SVM will classify the features on the basis of training dataset. Extracts the Features of faces from the image like nose, lips, and eyes in the form of points as follows,
   i. Eyebrow raises
   ii. Upper eyelid to eyebrow distance
   iii. Inter-eyebrow distance
   iv. Upper eyelid
   v. Mouth width
   vi. Mouth Open

5. Feature Calculation
   In the phase all extracted features are calculated and determine the eyes, mouth and nose location on person face. On basis of this calculation face motion is detects.

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Support Vector Machine (SVM)

- SVM is a powerful classifier that is able to distinguish two classes. SVM classifies the test image in to the class with highest distance up to the neighboring point in the training.
- SVM training algorithm built a model that predict whether the test image fall into this class or another.
- SVM necessitate a vast training data to decide a decision boundary and computing cost is very high although we are using single pose (frontal) detection.
- The SVM is a learning algorithm for classification which attempt to discover the finest distinguishing hyper plane which minimize the error for unseen patterns.

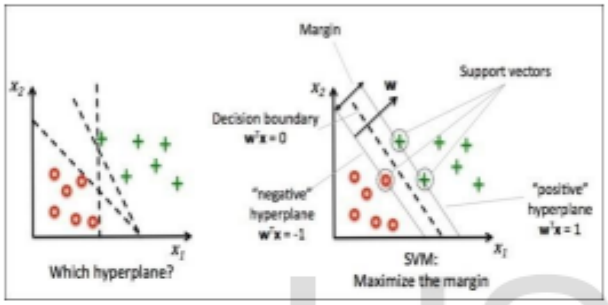

Fig 3. Distinguishing Hyper Plane to Minimize The Error

- The data which cannot be distinguished the input is mapped to high-dimensional attribute space where they can be separated by a hyper plane. This projection is well performed by means of kernels.

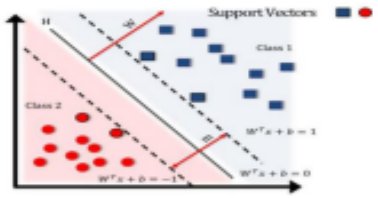

Fig 2. Separating Hyper Plane by Equation

If training set of samples and the equivalent resultant values {-1, 1}. So SVM intend to get the best separating hyper plane specified by the equation WTx+b that make use of the distance between the two classes as shown in above figure.

C. Recommendation Module

By applying SVM classifier on the extracted features the emotion Happy, Neutral, Sad are detected. Based on the user's mood like sad, angry, party, relaxed, happy the particular song from the playlist is played.

FUTURE SCOPE

This system, does have scope for improvement in the future. There are various aspects of the application that can be modified to produce better results, and a smoother overall experience for the user.

CONCLUSION

This project give us great advancement in the field of machine learning technology. Frame of mind- Play rhythm based on emotions fulfills to play the music based on the emotions of the user such as whether it is happy or sad. So, totally our work aims to develop a player which is based on user need and it helps to revive in case of free time or leisure time if we want to hear music based on our current situation.

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8.3 PLAGARISM REPORT

Curiginal

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8.4 REVIEW SHEETS