GAYATRI VIDYA PARISHAD

COLLEGE FOR DEGREE AND PG COURSES (A)

(Affiliated to Andhra University)

Rushikonda, Visakhapatnam

Department of Computer Applications

VISION

"Creating human excellence for a better society"

MISSION

Unfold into a world class organization with strong academic and research base, producing responsible citizens to cater to the changing needs of the society."

MUSIC AND GAME RECOMMENDATION

BASED ON EMOTION IN VOICE

A project report submitted in partial fulfilment of

the requirements for the award of the Degree of

Master of Computer Applications

Submitted by

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(Regd. No: PG222302032)

Under the Guidance of

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2022-2024

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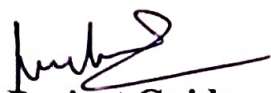
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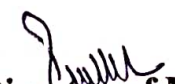## Rushikonda, Visakhapatnam

Department of Computer Applications

CERTIFICATE

This is to certify that the project report titled "**MUSIC AND GAME RECOMMENDATION BASED ON EMOTION IN VOICE**" is the bonafide record of project work carried out by **Mr. K. Manoj Krishna** (Regd. No. PG-222302032) as a student of this college, during the academic year 2022-2024, in partial fulfillment of the requirement for the award of the degree of Master of Computer Applications.

Project Guide
Sri A. V. Prabhakar

Director of M.C.A
Prof. I. S. Pallavi

External Examiner

DECLARATION

I, **Mr. K. Manoj Krishna** hereby declares that the project report titled **"MUSIC AND GAME RECOMMENDATION BASED ON EMOTION IN VOICE"**, is an original work done at **Gayatri Vidya Parishad College for Degree and PG Courses (Autonomous), Visakhapatnam,** submitted in partial fulfillment of the requirements for the award of Master of Computer Science, Gayatri Vidya Parishad College for Degree and PG Courses (A), affiliated to Andhra University. I assure that this project is not submitted in any other University or college.

K. MANOJ KRISHNA

(PG222302032)

ACKNOWLEGMENT

I consider it as a privilege to thank all those who helped me a lot for successful completion of the project "MUSIC AND GAME RECOMMENDATION BASED ON EMOTION IN VOICE".

I would like to thank **Prof. K.S.Bose, I/C Principal of Gayatri Vidya Parishad College for Degree and PG Courses(Autonomous)** who has provided full-fledged lab and infrastructure for successful completion of my project.

I would like to thank **Prof. I. S. Pallavi, Director of MCA,** who has obliged in responding to every request though she is busy with her hectic schedule of administration and teaching and suggested me with several changes a lot in completion of this project.

I would like to thank our ever-accommodating my project guide Department of Computer Applications, **Sri A.V. Prabhakar, Assistant Professor,** who has been very obliged in responding to every request though he is busy with his hectic schedule of teaching.

I thank all the **Teaching and Non-teaching staff** who has been a constant source of support and encouragement during the study tenure.

K. Manoj

(K. MANOJ KRISHNA)

ABSTRACT

Emotion plays a crucial role in human communication, significantly impacting our interactions and decision-making processes. This project explores the innovative integration of Speech Emotion Recognition (SER) technology with personalized entertainment recommendations. By analyzing vocal inputs, the system identifies the speaker's emotional state using advanced machine learning algorithms. Once the emotion is detected, the system recommends tailored music playlists and games that align with the user's current mood. This fusion of SER with personalized entertainment aims to enhance user experiences by providing emotionally congruent content, fostering emotional well-being, and potentially offering therapeutic benefits. Our approach leverages a robust dataset for training the SER model and employs collaborative filtering techniques for recommendation, ensuring relevance and personalization. This project not only showcases the potential of emotion-aware technologies but also paves the way for more empathetic and responsive digital environments. By extracting and classifying audio features, the system identifies emotions such as happiness, sadness, anger, fear, and neutrality. This project combines audio preprocessing, feature extraction, deep learning models, and adaptive algorithms to create a robust and responsive user experience. The applications of this technology are diverse, ranging from entertainment and gaming to emotional well-being support, showcasing the transformative potential of AI and ML in understanding and responding to human emotions. Moreover, this system can be integrated into various platforms, from mobile apps to virtual assistants, further expanding its usability. Future developments could explore real-time emotion recognition and multi-modal inputs, incorporating facial expressions and body language to enhance accuracy and personalization even further.

CONTENTS

10. REFERENCES

11. APPENDIX

1. INTRODUCTION

In the real world, we are surrounded by humans who can learn everything from their experiences with their learning capability, and we have computers or machines which work on our instructions.A Machine Learning system learns from historical data, builds the prediction models, and whenever it receives new data, predicts the output for it. The accuracy of predicted output depends upon the amount of data, as the huge amount of data helps to build a better model which predicts the output more accurately.

The need for machine learning is increasing day by day. The reason behind the need for machine learning is that it is capable of doing tasks that are too complex for a person to implement directly. As a human, we have some limitations as we cannot access the huge amount of data manually, so for this, we need some computer systems and here comes the machine learning to make things easy for us.
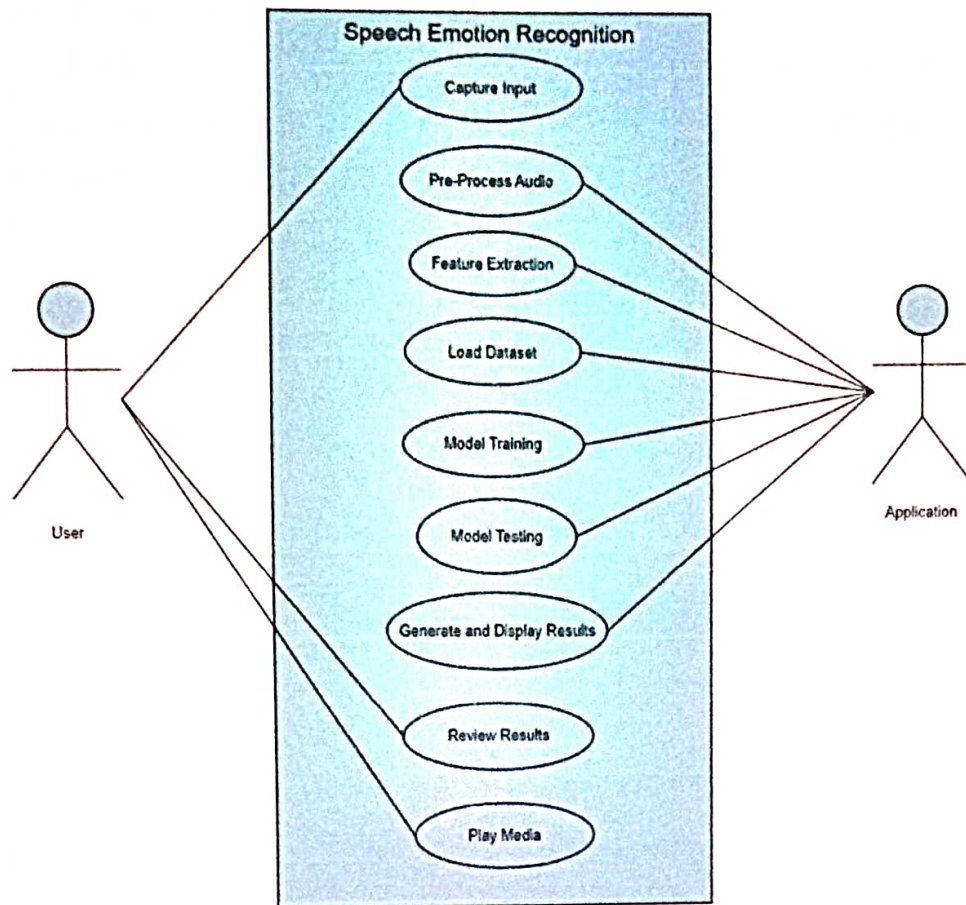
We can train machine learning algorithms by providing them the huge amount of data and let them explore the data, construct the models, and predict the required output automatically. The performance of the machine learning algorithm depends on the amount of data, and it can be determined by the cost function. With the help of machine learning, we can save both time and money.

The importance of machine learning can be easily understood by its use's cases, Currently. machine learning is used in self-driving cars, cyber fraud detection, face recognition and friend suggestion by Facebook, etc. Various top companies such as Netflix and Amazon have built machine learning models that are using a vast amount of data to analyse the user interest and recommend product accordingly.

1.1 Introduction to Machine Learning

Before we take a look at the details of various machine learning methods, let's start by looking at what machine learning is, and what it isn't. Machine learning is often categorized as a subfield of artificial intelligence, but I find that categorization can often be misleading at first brush. The study of machine learning certainly arose from research in this context, but in the data science application of machine learning methods, it's more helpful to think of machine learning as a means of building models of data.

Fundamentally, machine learning involves building mathematical models to help understand data. "Learning" enters the fray when we give these models to unable parameters

Fig. 3.4.1.2 Use Case Diagram

Description:

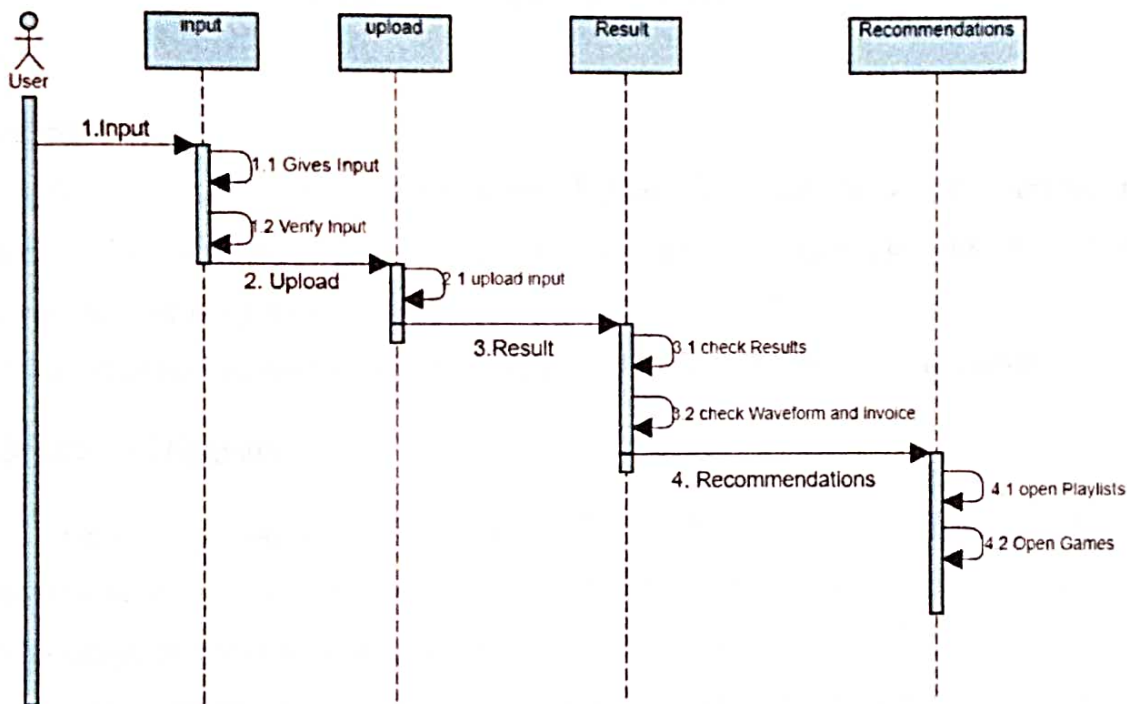**User:** The user will upload the dataset and selects the model for classification and training.

System: System will check the dataset and it preprocess the data therefore it splits into training and testing and predict the results

3.4.2 Sequence Diagram

A sequence diagram is the most commonly used interaction diagram. It simply depicts interaction between objects in a sequential order ie. The order in which these interactions take place. We can also use the terms event diagrams or event scenarios to refer to a sequence diagram Sequence diagrams describe how and in what order the objects in a system function. These diagrams are widely used by businessmen and software developers to document and understand requirements for new and existing systems. Sequence diagrams can be useful references for businesses and other organizations. Purpose of sequence diagrams are:

- Represent the details of a UML use case.
- Model the logic of a sophisticated procedure, function, or operation.
- See how objects and components interact with each other to complete a process.
- Plan and understand the detailed functionality of an existing or future scenario.

Fig, 3.4.2(a) Sequence Diagram for User

Description:

The sequence diagram describes the flow of events in which the user participates in the process of the execution of application. The user gives input by uploading a audio file or by recording and then after predicting the results he reviews and verify it and interact further.

6.4 Test Cases:

Test case for voice input handling

Test case ID	TC001
Pre-requisites	Valid audio file with a voice clip with .wav extension
Action	Upload the audio file to the system
Expected Result	Audio file is successfully uploaded and recognized by system
Test Result	Pass

Table 6.4(a): Test case for voice input handling

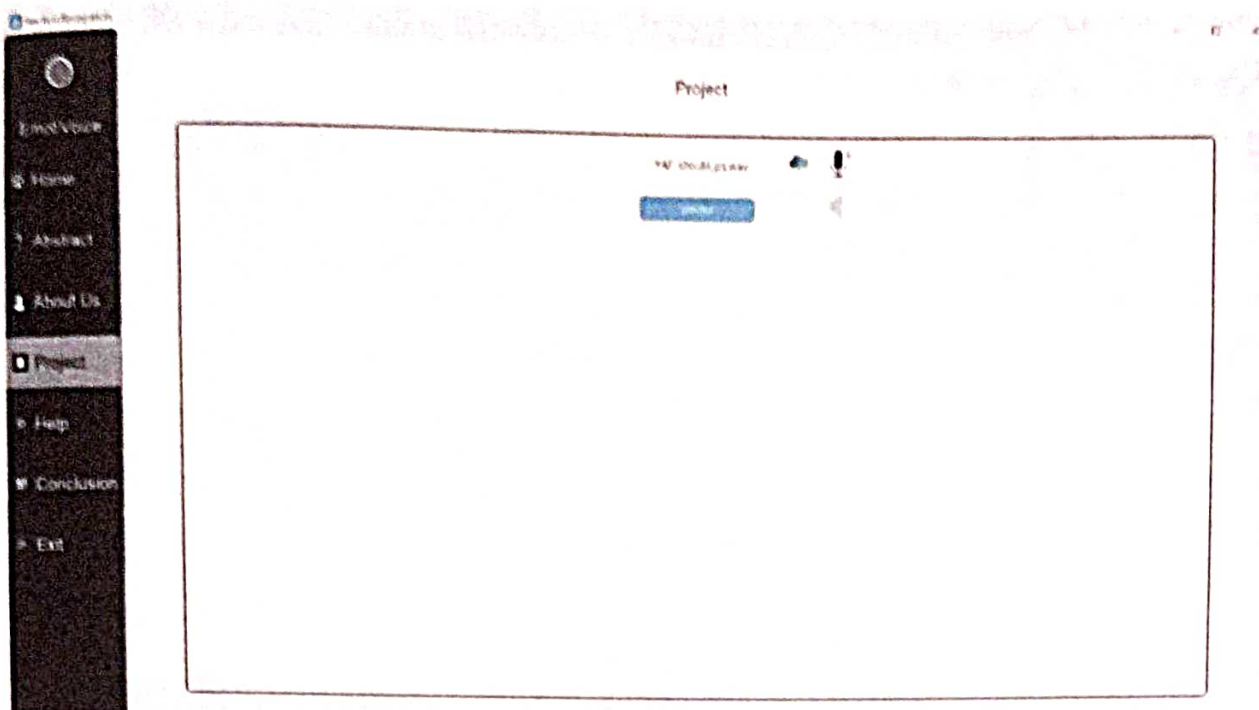### Test case for Emotion Prediction from audio

Test case ID	TC002
Pre-requisites	Uploaded Audio file
Action	Process the audio file emotion recognition model
Expected Result	Predicts the emotion from the audio
Test Result	Pass

Table 6.4(b): Test case for Emotion Prediction from audio

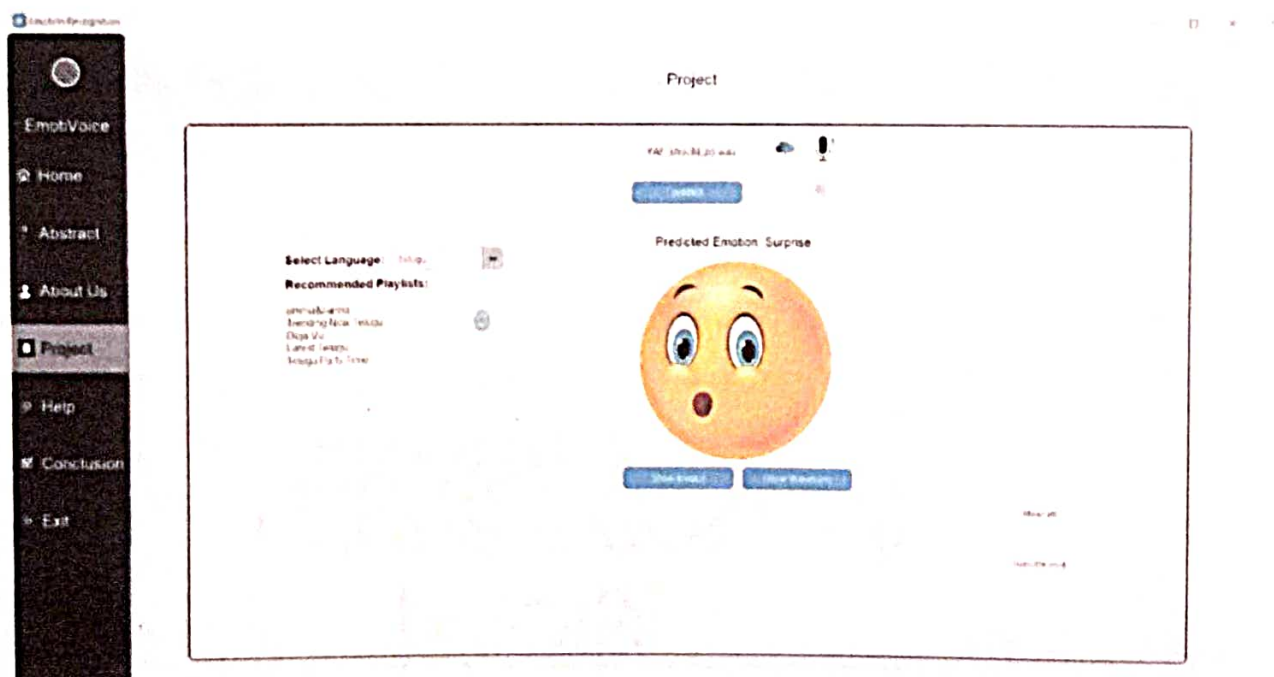### Test case for playlist recommendation from predicted emotion

Test case ID	TC003
Pre-requisites	Predicted the emotion from the audio
Action	Generate playlist from spotify app to recommend
Expected Result	System provides the playlist that matches the emotion
Test Result	Pass

Table 6.4(c): Test case for playlist recommendation from predicted emotion

Fig. 7.5(c) Project Page

After uploading file the user can experience a screen like shown above with the file name he uploaded, then after clicking "Predict" button, he can proceed further.

Fig. 7.5(d) Project Page

After the predict button is activated the emotion of the audio file uploaded is predicted and displays the emotionand an image related to the predicted emotion and also recommends playlists and games for the emotion predicted which are used to control the emotion of the user

8. CONCLUSION

The integration of Speech Emotion Recognition (SER) technology with personalized playlist and game recommendations marks a significant advancement in creating emotionally intelligent digital environments. By accurately analyzing vocal inputs to detect user emotions, our system offers tailored content that aligns with the user's current mood, thereby enhancing the overall user experience and contributing to emotional well-being. The combination of robust machine learning algorithms for emotion detection and collaborative filtering techniques for recommendation ensures that the content provided is both relevant and personalized, addressing the unique emotional states and preferences of each user.This project demonstrates the transformative potential of emotion-aware technologies in various applications, from entertainment to mental health support. By offering emotionally congruent content, such systems can enhance user engagement, aid in stress relief, and support mood regulation. Future developments could expand the range of emotions recognized and further refine recommendation algorithms, deepening personalization and relevance. Our work underscores the importance of integrating empathy into technology design, paving the way for more responsive and human-centered digital experiences.