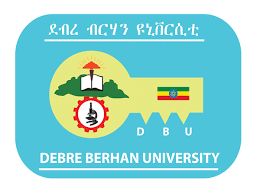
**COLLEGE OF COMPUTING**

 **Department of software engineering**

**MACHINE LEARNING PROJECT**

Face Recognition Emotion Based Music Recommendation system

**Group member name ID**

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HP

Debre Birhan

1. **Dagmawi yohanes 3503/11**
2. **Daniel kebede 0438/12**
3. **Abibo Addisu 0210/12**
4. **Biruk Yosef 1386/12**
5. **Introduction**

A Face Recognition Emotion Based Music Recommendation System is a system that uses facial recognition technology to recommend music based on the emotion detected from an individual's facial expressions. It is capable of detecting different emotions such as happy, angry(anger\_chill), surprise, sadness(cheerful), love, neutral and can make informed recommendations based on those emotions. This system has been implemented by various companies on YouTube videos to help users find the music that suits their current mood.

* **Motivation**

Our motivation for this project is to create a face recognition emotion based music recommendation system that can detect emotions from facial expressions and then recommend music tailored to each person's emotional state. This system would allow users to match their current mood with the appropriate type of music, increasing the effectiveness of therapeutic treatments, as well as general wellbeing. In today’s world with ever increasing advancements in the field artificial intelligence enabled system that can accurately recommend music and audio content to users based on facial expressions. Our system should be able to capture and analyze the user’s facial expressions and use them to identify their preference in music. The purpose of such a system is to enable users to listen to suitable music tailored to their current emotional state, thereby enhancing their listening experience.

1. **Statement of problem**

In old style music players a user had to manually browse through the playlist and select songs that would soothe his mood. Music listeners have tough time creating and segregating the play-list manually when they have hundreds of songs. It is also diﬃcult to keep track of all the songs. Sometimes songs that are added and never used, wasting a lot of device memory and forcing the user to ﬁnd and delete songs manually. Users have to manually select songs every time based on interest and mood. User’s also have diﬃculty to re-organize and playing music when play-style varies.

1. **Objectives**

* General objectives

Face recognition emotion based music recommendation system is a machine learning technique that uses facial expressions from live videos to detect and recognize the emotions of users in order to recommend songs based on the emotion. The system is designed to personalize song recommendations from you tube best match the user’s emotional state.

* Specific objectives

The main objective of this face recognition emotion based music recommendation system is for it to accurately identify a user’s emotions using facial recognition and make song selections that best suit their current emotional state. In addition, the system should also be able to learn over time by introducing more algorithms and personalizing the recommendations based on individual user interests.

The face recognition should also be light-weight enough so that it can run accurately on standard consumer hardware with minimal latency.

1. **Methodology**

We are using agile methodology because integrates the emotional response of a person through facial recognition and then recommends music according to their emotional state. The agile methodology adopted by this approach facilitates rapid development cycles and quicker deployment of features to ensure maximum satisfaction of users. To optimize performance, the model is constantly updated with information gathered from user interactions; eventually adapting its behavior to the user's specific preferences and providing them with better music suggestions accordingly.

Algorithms Used

* Convolutional Neural Networks
* Classification Based on the CNN

The emotions recorded in the training phase are the labels on which the incoming data will be classified.

Data source and preprocessing

Live video from the Webcam

Pre-trained python frameworks pre-process and manipulate the incoming data.

Frameworks and Libraries Used;

Mediapipe

Opencv

Tensorflow

Numpy

Keras

Streamlit

1. **Implementation**

Face recognition emotion based music recommendation system is a computer vision-based technology for analyzing facial expressions and extracting meaningful information that can be used to generate personalized music recommendations. The system uses multi-modal analysis of the user's facial expressions in response to different types of music, and combines this data with deep learning algorithms to generate recommendations based on the user's emotion. The system can identify positive emotions such as happiness, love and surprise negative emotions such as fear, angry and sadness. Once emotion is identified, the system can recommend songs that match the user current mood. With an ever increasing data set stored in facial expression databases, these systems are becoming very accurate at detecting people’s emotion states in order to provide meaningful recommendations.

The most important part of implementing this type of system is collecting accurate facial expression data from users’ real-time performances in order to determine which song or genre best matches their current state of emotion. This requires multiple cameras (e.g., webcams) to capture videos of the users’ face during different parts of the performance. These videos must then be fed through computer vision algorithms in order to extract key features from those videos (eyebrow movements, mouth shapes etc.), which make up the basis for understanding user’s emotional states. After analyzing these features using deep learning algorithms, it then becomes possible for systems to address more sophisticated tasks such as identifying small nuances between different levels of happiness or distinguishing between fear and sadness. With further development, these systems will become more accurate; enabling them to make more accurate deductions about individual preferences in music without relying on user input directly for types of music they might like or dislike.

1. **Recommendation and Conclusion**

The face recognition emotion based music recommendation system has proven to be a very beneficial tool for detecting the emotional state of users and recommending the most appropriate music accordingly. The system is based on machine learning algorithms and efficiently highlights individual preferences. They make sure that users are provided with recommended you tube video music that match their current mood and offer not just entertainment but also relaxation.

By using this system, users can find out what kind of emotions their faces can show, identify the emotion immediately and then receive corresponding music recommendations. This technology can bring numerous advantages to its implementations, such as increasing customization, making customers happier with better music recommendations, improving the customer experience of online platforms and helping marketers understand their target audience better.