Project Proposal

Music Therapy Treatment based on Emotion Detection

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Problem Statement

We are trying to solve the problems mentioned below-

1. Helping people to overcome mental stress, anxiety, and acute depression, including other mood fluctuations like- gloom, worry, and fear (*untouched yet*). Thus it will be more like a music therapy system rather than a mere music recommendation system.
2. We are also focussing on people who drive unaccompanied and are going through mental issues. Our model will detect the mood and play as a positive distraction, maybe by lifting up the mood.

Survey of the Background Research & Developments

Through a thorough review of the existing literature, we have identified various approaches to implementing a music recommender system, and we have leveraged this knowledge to develop our system's objectives. By focusing on the correlation between music and mood, our system offers a novel way of improving users' moods through music. In the current scenario, most of the recommendation systems focus on moods like - happy, sad, neutral, or surprised.

However, our idea aims to revolutionize the music industry by leveraging the power of AI-powered applications to create a state-of-the-art music recommender system. Our system offers a unique approach to music recommendations by utilizing facial emotion recognition, especially facial emotions that are not explicitly targeted yet, such as **worry, fear, gloom**, etc. Therefore, through this new dimension, we can determine the user's mood more accurately and provide them with a curated playlist that matches their current emotional state.

Additionally, our model will try to lessen users' efforts in creating and managing playlists. Furthermore, our music recommendation system based on facial emotion recognition offers a **user-friendly** and **innovative** solution to the traditional approach of music recommendations, with the ability to detect certain un-explored emotions such as worry, fear, and gloom, among others.

In the future, we envision expanding the scope of our system to include a mechanism that would be beneficial in **music therapy treatment** in the wider application of healthcare, particularly for patients experiencing **mental stress, anxiety, acute depression**, and **trauma**.

Preliminary Plan

The preliminary plan follows the below steps-

1. **Data Collection-** We will be collecting adequate data through open-source datasets available on the Kaggle, & UCI ML repo.

2. **Exploratory Data Analysis (EDA) -** To get insights from the data we will do the EDA after data preprocessing.
3. **Model Training & Hyperparameter Tuning -** After getting the data and performing resizing and rescaling we will separate the data into training, testing, and validation sets. Thereafter we will be using the Keras to train the model.
4. **Batch Normalization -** It is the technique of adding extra layers to a deep neural network to make it faster and more stable. In this, first, the input will be normalized, and later rescaling and offsetting will be performed.
5. **Getting the best model parameters -** We will try different models to check which model works better for us and then we'll move ahead with that as per the accuracy results.
6. **Visualization -** In this phase, we will try to visualize some of the outcomes.

References

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