

# Manual For MOOD2MUSIC

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## **Introduction**

The Mood-Based Song Recommender is a Streamlit web application [4] that uses text, facial expressions, or a manually specified mood to choose emotionally appropriate songs. It combines a CNN image classifier [1] trained on FER2013 [2], a Hugging Face DistilBERT model [5] for text emotion analysis, and a curated Spotify dataset [3] to create tailored playlists based on the observed emotion.

## **System Requirements**

- Python 3.8 or later
- pip (Python package manager)
- Internet connection (for first-time model downloads)
- Web browser (for accessing the Streamlit interface)

## **Installation Steps**

1. Unzip the folder.
2. Open a terminal or command prompt and navigate to the project directory.
3. Run the following command to install all dependencies:

*pip install -r requirements.txt*

4. Launch the app using

*streamlit run app.py*

## **Application Overview**

After launching the app, you will be presented with three input options to identify your mood:

- Text Input - Describe how you're feeling. The app uses a Hugging Face BERT model [5] to analyze the emotion in your sentence.
- Preset Emotion - Choose from predefined moods such as Happy, Sad, Angry, Fear, Surprise, or Neutral.
- Image Input Upload or capture a photo using your webcam. A DenseNET121 model [1] trained on facial expression data (FER2013) [2] will predict the emotion from your face. After detecting your mood, the app recommends a list of 10 songs based on a Spotify dataset [3].

Each recommendation includes the track name, artist, genre, album, duration, a visual popularity bar, and a "Play on Spotify" button.

## Folder and File Descriptions

File	Description
<b>song_recommender.py</b>	Filters and returns only appropriate songs in the playlist based on the mood
<b>emotion_models.py</b>	Handles loading and prediction of the text and image-based emotion prediction
<b>app.py</b>	Main streamlit web interface
<b>best_model-denseNET121.pth</b>	Trained denseNET121 model based on FER2013 to classify facial emotion
<b>fer-model-densenet121.ipynb</b>	The Python notebook where the model was trained – Kaggle based GPU.
<b>requirements.txt</b>	Python libraries required to run the application

## Using the App

1. Open the app using the terminal: **streamlit run app.py**
2. Choose how you'd like to input your mood:
  - a. Type in a sentence describing your feelings
  - b. Select a preset mood from the dropdown
  - c. Upload a facial image or take a photo using your webcam
3. Once the mood detects the emotion, the app will show ten songs that correspond to your emotion. When the user clicks the refresh button, he or she will see new results.

### Each song card includes:

- Track name
- Artist Name
- Album
- Genre
- Duration (in minutes)
- Popularity displayed as a visual bar
- A clickable button to open the URL of the music on Spotify

## Known Issues and Notes

- Allowing webcam should be ensured if using camera input.
- When loading the Hugging Face model for the first time, an online connection is required.
- Spotify links currently lead to search result pages, not specific tracks.

- The probabilistic predictions of the model can change depending on the lighting (in image mode) or the wording of the input.

## **Contact & Credits**

Developed by Group Number: 22 for COMP5425 Assignment. Uses open-source tools including PyTorch, Hugging Face, Streamlit, and Kaggle datasets.

## **References**

- [1] G. Huang, Z. Liu, L. van der Maaten, and K. Q. Weinberger, "Densely connected convolutional networks," in Proc. IEEE Conf. Comput. Vis. Pattern Recognit. (CVPR), 2017, pp. 4700–4708. [Online]. Available: <https://doi.org/10.1109/CVPR.2017.243>
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- [3] Kaggle, Spotify Tracks Dataset, 2022. [Online]. Available: <https://www.kaggle.com/datasets/maharshipandya/-spotify-tracks-dataset>
- [4] Streamlit Inc., Streamlit Documentation, 2023. [Online]. Available: <https://docs.streamlit.io/>
- [5] B. Savani, DistilBERT-Base-Uncased-Emotion, Hugging Face, 2022. [Online]. Available: <https://huggingface.co/bhadresh-savani/distilbert-base-uncased-emotion>