

Final Project of Machine Learning

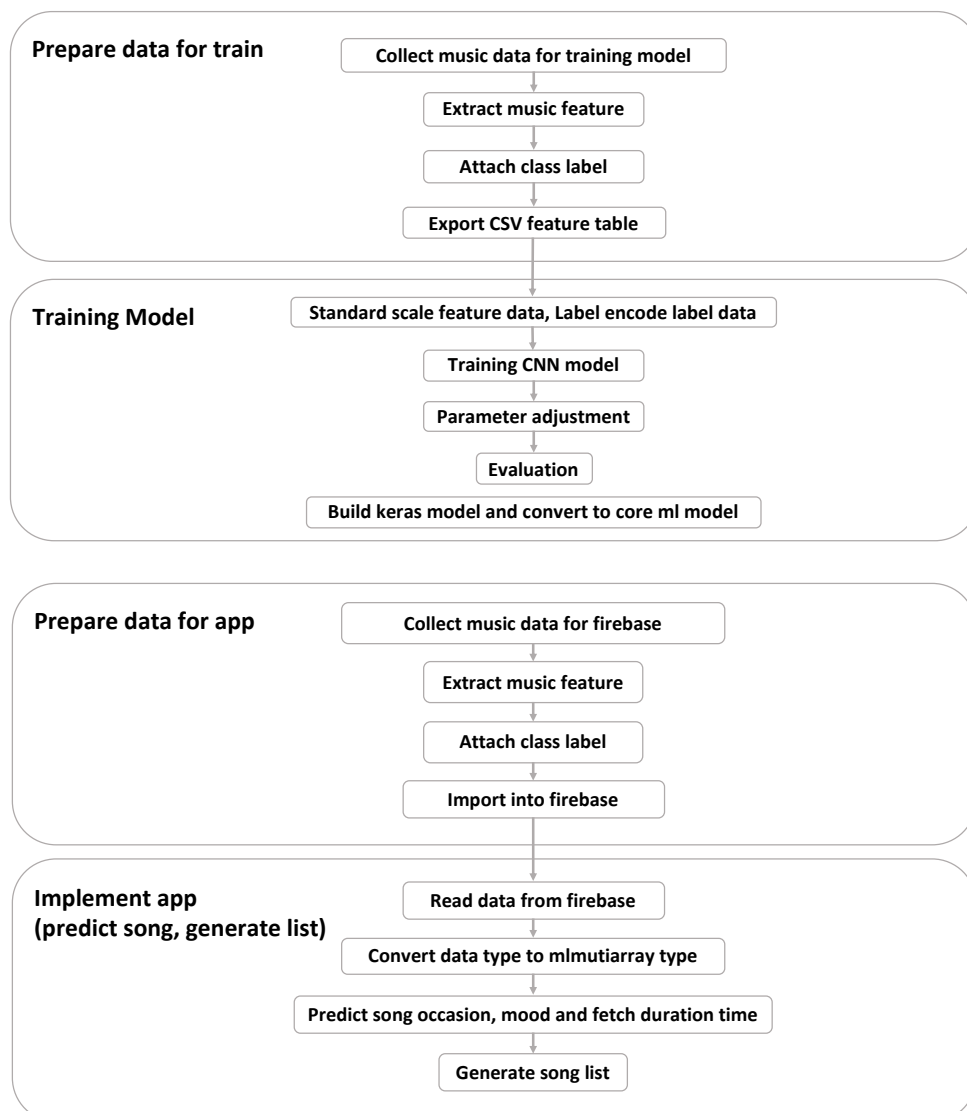
Automated Playlist Generation System

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I. Research Motivation and Goals

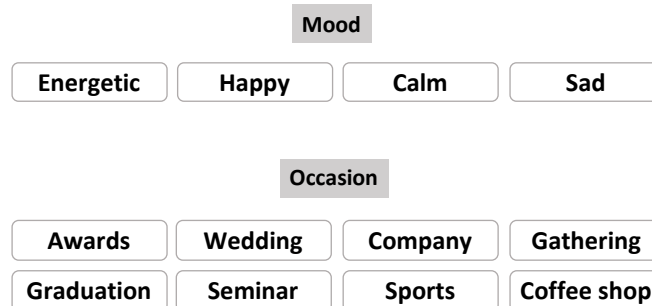
Background music is crucial for setting the right atmosphere in various situations. However, selecting the perfect songs can be time-consuming, and may not fit the desired ambiance. Many of today's playlists are standardized and may not cater to individual needs. Hence, I want to create a system that can generate customized playlists suited to specific occasions, locations, durations, motions, and the like.

II. Research Methods and Steps



1. Classify music by occasion and mood

Classifying music based on occasion and mood can help people better choose appropriate music for different contexts.



2. Collecting a large amount of music data

Manually collect music data according to different scenes and moods on YouTube.

3. Extract music feature and attach label

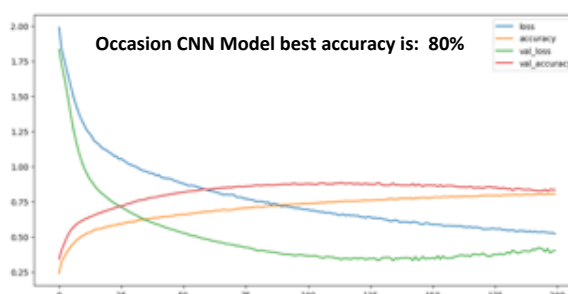
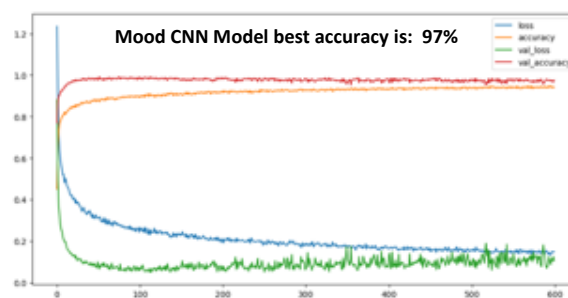
Extract feature using Python and the Librosa library, such as Mel Spectrogram, spectral centroid, and many others, also attach label.

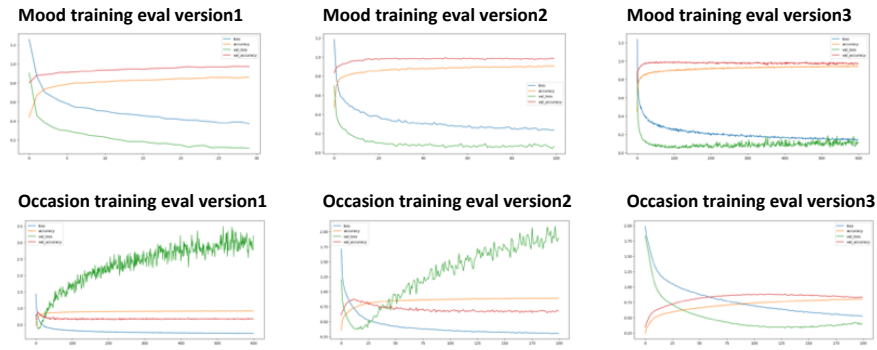
songs_feature.csv

The screenshot shows a CSV file with multiple columns representing various music features (e.g., tempo, energy, danceability) and their corresponding labels (e.g., mood, occasion). The data is organized in a grid-like format with many rows of numerical values.

4. Training data by CNN Model

Training mood dataset and occasion dataset into cnn model by tensorflow keras, and adjust the parameters to correct the over-fit situation.





5. Convert Model to CoreML Model

Use coremltoos to convert keras model to core ml model to fit in ios app.

6. Use CoreML on IOS app

Implementing a user interface on the iOS platform.



III. User interface

