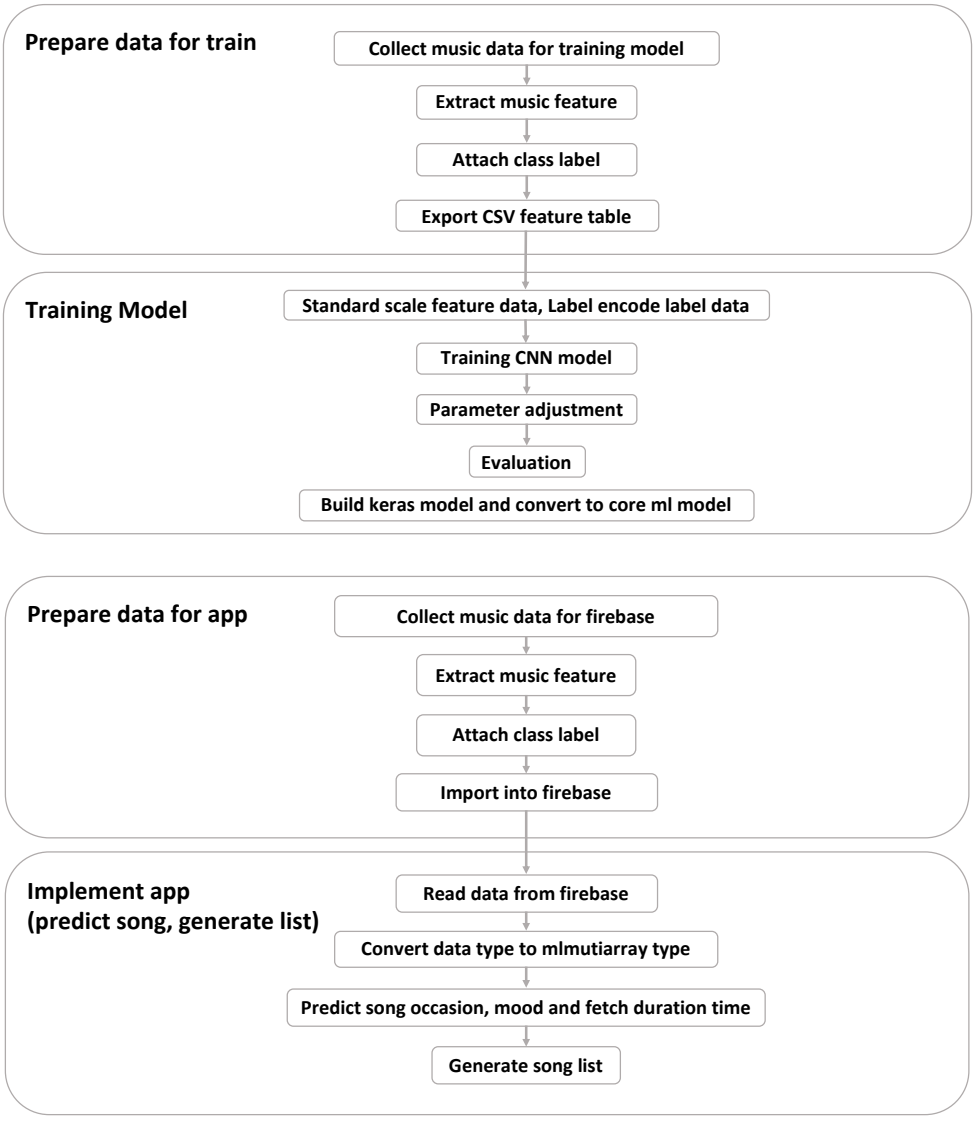
Final Project of Machine Learning

Automated Playlist Generation System 108AC1026 林寧

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.

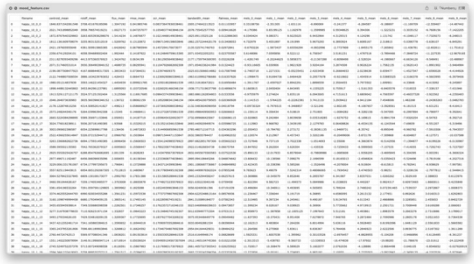
Mood			
Energetic	Happy	Calm	Sad

Occasion			
Awards	Wedding	Company	Gathering
Graduation	Seminar	Sports	Coffee shop

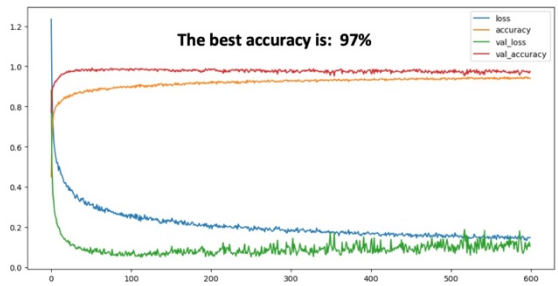
2. Collecting a large amount of music data
   Manually collect music data according to different scenes and moods on YouTube.

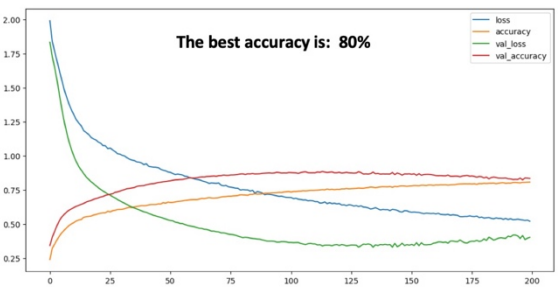
3. Extract music feature and attach label
   Extract feature using Python and the Librosa library, such as Mel Spectrogram, spectral centroid, and many others, also attach label.

songs_feature.csv

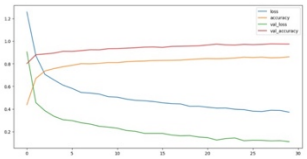


4. Training data by CNN Model
   Training mood dataset and occasion dataset into cnn model by tensorflow keras, and adjust the parameters to correct the over-fit situation.

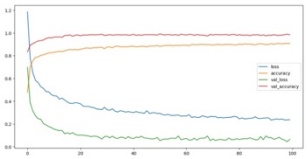




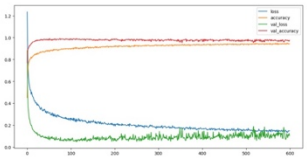
Mood training eval version1



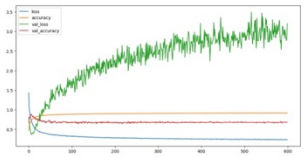
Mood training eval version2



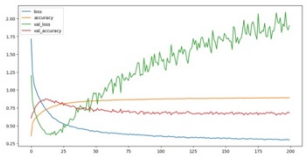
Mood training eval version3



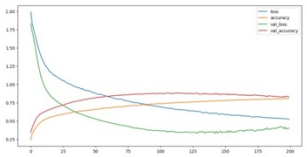
Occasion training eval version1



Occasion training eval version2



Occasion training eval version3



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