

# Music Type Detection Using Deep-Learning

## Intro to Machine Learning Project Plan

### Team member:

- Tianyunyang Wang, NID: N14855366, NetID: tw1719;
- Bufan Song, NID: N15169107 , Net ID:bs3498.

## Project Abstract

### Procedure 1

#### Search for a data set for training and testing

We could find our data through **Million Song Dataset**, where contains more than 3 billion songs.

### Procedure 2

#### Discard stereo

There are way too much small subgenres among all the genres in the website. In order to simplify our task and avoid overfitting, we should promptly discard some of them. For example, we don't really need this Concertos genre, Classical will do the trick.

### Procedure 3

#### Extract short information slices of the song

When training and testing, even a single song consists of too many values. We have to reduce the length of our sample to prevent us from heavy work and long simulating time.

## Procedure 4

### Convert audio to frequency domain.

The transformation from time domain to frequency domain gives us simple ways to evaluate the data and it could be shown as spectrogram in a PNG file in order to provide a visible graph to analysis.

## Procedure 5

### Choose a fitting model

For now, we intend to use the CNN and Tensorflow to complete our task, with further information, we may reconsider the classifier.

## Procedure 6

### Train the chosen model

After generating the prompt model, we will split training and testing data, for example, 70% compared to 20%. And the 10% left, we will use it to validate our model accuracy.

## References

Clevert D A, Unterthiner T, Hochreiter S. Fast and accurate deep network learning by exponential linear units (elus)[J]. arXiv preprint arXiv:1511.07289, 2015.

<https://labrosa.ee.columbia.edu/millionsong/pages/code>

<https://labrosa.ee.columbia.edu/millionsong/pages/getting-dataset#subset>

<https://www.youtube.com/watch?v=pg9apmwf7og&t=129s>