

EAS 503 Project Melody Maker

What is the data and how do we get it?

The data in this case is midi data or messages collected from various websites that have midi songs there are a lot of websites that have midi songs.

Using the package mido or pretty midi we can use it to extract the data

How do we process it?

After pulling in a midi file you can use the method `print_midi_messages()` from the mido package to view the midi messages within the midi file you will see objects like this

```
<message note_on channel=0, note=60, velocity=64, time=0>
```

The messages contain information types such as

note_on or note_off - information about whether the note is initiated or released. The first note of a chord will register as initiated

channel - Multiple midi

note - pitch this is measures with middle C or C4 being 60 and C5 being 72. (0-127)

Velocity - the soft or hardness of the note can give a note "feel". (0 - 127)

Time - This signifies the time that takes place since the last note was released.

What do we do with this data?

Our goals are:

- Find a model to make prediction about the next set of midi messages based on the midi messages gather from the midi tracks that we fed in
- Get the midi data into a readable format so that we can fit the model and make predictions.
- Use mido or pretty midi to change the formatted data back into midi messages to be exported and played back.

N-gram model a suggest for possible model

One possible way to format the data is to put all the categories, note_on/off, channel, notes, velocity, time within a tuple structure called an N-gram, or in other words like this

(note_on/off, channel, notes, velocity, time)

Using the previous messages, we can use it to calculate the probability of a second

Hidden Markov Model

MIDI Documentation

<file:///C:/Users/ELRA7/Downloads/Kedao%20Wang,%20Predicting%20Hit%20Songs%20with%20MIDI%20Musical%20Features.pdf>

<https://users.cs.cf.ac.uk/Dave.Marshall/Multimedia/node156.html#SECTION04131000000000000000>

<https://www.izotope.com/en/learn/midi-data-what-it-is-and-how-to-use-it.html>

Mido documentation

<https://mido.readthedocs.io/en/latest/messages.html>

Pretty Midi Documentation

<https://craffel.github.io/pretty-midi/#>