Melody Ex Machina

Gray Davidson | June 28th, 2018

Let’s hear two melodies

If you didn’t tell which one was a computer, my algorithm just passed the turing test (for music).

Introduction/Domain

Talk about why generating Music is Complicated

- So many elements
- Interpretive
- Huge File Sizes

Motivate this exploration

I am personally very interested in the ways that computers could generate style and nuance in their interactions.

Motivate use of deep learning

To approach this problem you essentially must have deep learning.

Some deep learning architectures are specifically designed to explore sequences with memory.

Data collection & Data quality

What is Midi
Midi Preprocessing (getting monotonic melodies)
Strengths & Weaknesses of this data format
- Melodies don't contain many rests
- Monatonic
- Consistent Style
  - Magenta's Performance RNN says this is quite important
- Small File Size
- No nuance in Note Length (quantized)

Translating Midi for Neural Networks
- Music 21
- How can Networks take in info?

Show real-time midi playing?

Modeling approaches

RNNs/LSTMs
Embedding (Failure?)
Various Configurations of network

Tell less and feel free to drop powerful words in here without going into too much depth. This is showmanship and it's ok not to worry about teaching in this moment.

Need a really good graphic here to hel people get it.

Appendix1

All the models I tried

Appendix2

Lots more depth about the embedding

Appendix3

More midi files both the inputs and the outputs

Appendix4

More in depth talk abotu Music21 and Midi Manipulation in Python

Appendix5

How did the midi files go from Piano to sounding nice?

Ableton/Timbre/Drone