Project 3 – Proposal

Composing Music using a Neural Network

Topic
In this project, I will be using a neural network to compose music.

Business Problem
Twitch and YouTube are popular streaming platforms where content creators interact with their audience. Content can include a variety of topics such as video gaming, playing musical instruments, product or service demonstrations, webinars and training, just chatting with the general audience, or anything else. One thing that comes up is the conflict of using copyrighted music during the live stream. This can get live streamers banned from streaming services. Machine-generated music would expand the catalog of DRM-Free music for streamers, small business owners or really anyone, to be able to leverage as their intro or stream background music.

Datasets
I will be using a sample of 10-20 midi files downloaded from https://bitmidi.com/. MIDI stands for musical instrument digital interface. These files can be used to train neural networks to generate/compose music.

Methods
Recurrent neural networks can be used to generate sequence data. In this project, I will be applying it to sequences of musical notes in order to generate new music. I will be using a LSTM Neural Network in Keras. I will also be using Music21, which is a python toolkit for computer-aided musicology.

Ethical Considerations
When machine composes music, or creates any kind of original art, who owns it? Is it the data scientist who provided the training data set? Is it the owners of the original data sets used to train the machine? Is it the people who created the packages used in the code? A combination of the above or someone else, or maybe no one? Is music considered "original" if it is based on a training set of human composed music?

Challenges/Issues

While working on an initial review of code, I noticed that much of the code I am finding out there does not work as/is due to updates in Python and packages. This project will require a lot of research and troubleshooting. I am also worried about the data set size and working with Keras as epochs are notorious for taking a long time. The music choice for the training data set will have the greatest impact on the computer-generated composed music.

References

Chollet François. (2021). *Deep learning with python*. Manning Publications.

Popular midis. BitMidi. (n.d.). Retrieved February 13, 2022, from https://bitmidi.com/

Skúli, S. (2017, December 9). *How to generate music using a LSTM neural network in Keras*. Medium. Retrieved February 13, 2022, from https://towardsdatascience.com/how-to-generate-music-using-a-lstm-neural-network-in-keras-68786834d4c5

YouTube. (2019, August 27). *Following a tutorial: How to generate music with an LSTM*. YouTube. Retrieved February 13, 2022, from https://www.youtube.com/watch?v=dZ_tILnA9MY