MAIS Proposal: AI-composed jazz music

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1   Dataset

MIDI Dataset from Kaggle: https://www.kaggle.com/saikayala/jazz-ml-ready-midi

I've chosen this because it has 800+ MIDI songs in it. They are all the same genre of music (jazz) which will be useful for recreating a specific style of music. I've chosen to train my model using written music instead of audio files because it makes the data set much simpler.

2   Methodology

2.1   Data Preprocessing

I would convert the MIDI data into plain text split up into chunks denoting short time steps with characters representing each note played in that time.

2.2   Machine learning model

I've decided to use a long short-term memory recurrent neural network for this. I believe an RNN is a good choice for this as it is capable of "remembering" all of the past data it has been given.

I also considered using a generative adversarial network for this, with the MIDI data converted into an image (x-direction being time and y-direction representing the notes, pixels at a position (x,y) colored white or black to represent whether the note is played at that time). However this would limit the length of the output music based on the size of the input pieces, and require a much larger input data size compared to the LSTM model.

2.3   Final conceptualization

I would want to integrate my model into a webpage where a user can generate random pieces of music and slightly tweak them (changing things which aren't handled by the AI such as BPM and MIDI instrument used) and then keep pieces that they like. I don't expect the music that my AI will make to be in any way better than music that people have made, but I think it has potential as a novelty.

If the music output is of very low quality, I'll stick to a poster presentation where I can at least evaluate how well the AI can replicate chords, music scales, etc.