Music Generation Using LSTM Neural Network

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Objective: This case-study focuses on generating music automatically using char-Recurrent Neural Network (RNN) with LSTM. The task here is to take some existing music data then train a model using this existing data. The model will learn the patterns in music that we use to train model. Once it learns this, the model should be able to generate new music. It will not simply copy-paste from the training data. It will understand the patterns of music to generate new music. The model will not generate new music which is of professional quality, but it will generate a decent quality music which should be melodious and good to hear.

Music can be represented both in terms of MIDI and abc format. Most of the newly implemented models used MIDI format Datasets, I am using abc format dataset to explore more about how the results can be improved using this format.

Since we got an idea about different kinds of CNN's in Project1, I wanted to explore on LSTM kind of networks which deals with sequential data.

Baseline for comparison:

https://towardsdatascience.com/how-to-generate-music-using-a-lstm-neural-network-in-keras-68786834d4c5

Project plan: Input to the model is a sequence of musical events/notes. Output will be new sequence of musical events/notes. In this case-study I am taking single instrument music as input and generating a music of similar kind as output. The baseline model used MIDI format Datasets tunes as input, I am using abc format dataset (O'Neill's Music of Ireland Database) with 1800 tunes to generate better quality of music. I will try to increase the accuracy of the model by varying the architecture and tweaking different parameters to get a better model with improved accuracy.

Data Set:

- http://trillian.mit.edu/~jc/music/book/oneills/1850/X/ - O'Neill's Music of Ireland (1850)

Evaluation Method:

Validation accuracy is the Evaluation Method.