Music Generation using Deep Learning

Bidyadhar Mohanty
Shreyas Pandith
Darshan V

Abstract
This model will implement a recurrent neural network trained to generate classical music. The model, which uses LSTM layers and implemented in keras/Tensorflow, learns to predict which notes will be played at each time step of a musical piece based on the previous music sequence.

Project Survey
http://www.hexahedria.com/2015/08/03/composing-music-with-recurrent-neural-networks/

https://highnoongmt.wordpress.com/2015/05/22/lisls-stis-recurrent-neural-networks-for-folk-music-generation/

https://medium.com/artists-and-machine-intelligence/neural-nets-for-generating-music-f46dffac21c0

https://web.stanford.edu/class/cs224n/reports/2762076.pdf

Objectives:

- **Learning RNN and LSTM network for the implementation of the model.**
- **Data preprocessing and cleaning(music "midi" files).**
- **Learning the usage of DL library like Keras/Tensorflow and Music21 for handling music files of "midi" format.**
- **Have some understanding of time signatures in music.**
- **Modify the model to generate tabla music.**

Timeframe

Approx time of review	**Expected Status**
Deliverable One (Sept end)	We will be learning the following concepts of RNN for the implementation of the project ● Dropout

	● LSTM ● Time series prediction ● Vectorization ● Cross Entropy Loss Function ● Gradient Descent Optimization
Deliverable Two (Nov mid)	Dataset acquisition and pre-processing
Deliverable Three (Dec end)	Model implementation in keras/tensorflow
Deliverable Four (Jan end)	Hyperparameters tuning and try to improve the accuracy
Deliverable Five (Feb end)	Generate samples for tunes using the model
Deliverable Six (March end)	Try to generate tabla tunes by modifying the model

Monitoring and Evaluation

At the end of the project, we will be able to generate sample music using the model built. Further, we will try to generate tabla tunes using the same model, but with changes.