

Deliverables:

The deliverables folder contains 4 Jupyter Notebooks. Each of the file contains different variation of the model. They are:

- **Music_Generation_Train_NoDropoutModifiedData:** Using the preprocessed data without dropout layers.
- **Music_Generation_WithDropoutModifiedData:** Using the preprocessed data with dropout layers.
- **MusicGeneration_NoDropout_InitialData:** Using the complete initial data without dropout layers.
- **MusicGeneration_WithDropout_InitialData:** Using the complete initial data with dropout layers.

There are two data folders inside deliverables folder:

Data folder contains weights for the Model 1 mentioned in the report. I have saved weights for every 10 epochs. Since I used early stopping the model with the best weights are also saved. These weights are stored for each of the four variations in the data folder.

Concat.txt : File containing the initial 1850 tunes in abc format.

Test_result.txt : File containing the preprocessed 1850 tunes in abc format.

Char_to_index.json : The json file containing all the unique characters with their respective index.

There are log files stored in Excel format. These log files store the accuracy, loss for each epoch. This is stored for all the 4 variations of the model.

Data2 folder contains all the similar files present in Data folder but these are for Model2 mentioned in the report.

The weights from Model1 are used to initialize Model2 which helps in increasing our accuracy of the model.

I have included a cell in each Notebook to load weights and generate music for the given input using the best weight saved.

I have included the graphs for each variation in the notebook which shows the variation of loss and accuracy with epochs.

Model Summary: Below are the images of model summary.

Model1:

Number of unique characters in our whole tunes database = 87

Model: "sequential"

Layer (type)	Output Shape	Param #
embedding (Embedding)	(16, 64, 512)	44544
lstm (LSTM)	(16, 64, 256)	787456
lstm_1 (LSTM)	(16, 64, 128)	197120
time_distributed (TimeDistri	(16, 64, 87)	11223
activation (Activation)	(16, 64, 87)	0
Total params: 1,040,343		
Trainable params: 1,040,343		
Non-trainable params: 0		
Total number of characters = 500562		

Model2:

Number of unique characters in our whole tunes database = 87

Model: "sequential"

Layer (type)	Output Shape	Param #
embd_1 (Embedding)	(16, 64, 512)	44544
lstm_first (LSTM)	(16, 64, 256)	787456
drp_1 (Dropout)	(16, 64, 256)	0
lstm (LSTM)	(16, 64, 256)	525312
dropout (Dropout)	(16, 64, 256)	0
lstm_1 (LSTM)	(16, 64, 256)	525312
dropout_1 (Dropout)	(16, 64, 256)	0
time_distributed (TimeDistri	(16, 64, 87)	22359
activation (Activation)	(16, 64, 87)	0
Total params: 1,904,983		
Trainable params: 1,904,983		
Non-trainable params: 0		
Total number of characters = 500562		

Table containing the results:

	With Dropout		NoDropout	
	Model1_Accuracy	Model2_Accuracy	Model1_Accuracy	Model2_Accuracy
Original Data	80. 3	86. 03	84. 08	92. 6
Optimized Data	76. 2	82. 12	84. 66	96. 77

Music Evaluation:

The generated music can be heard by copying the generated abc format text and pasting it at <https://www.abcjs.net/abcjs-editor.html> website. It will generate music from the abc text.