**OBSERVATIONS**

**Expt 1-**

Hidden layers= 128

Database=Nottingham

Epochs=100

Drop out=0.1

Batch size=128

Optimizer=adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations= tanh

Used 2 LSTMs and a fully connected layer

Prime length=25 and generation length=900

**Model Structure**

**Layer (type) Output Shape Param #**=================================================================  
lstm\_1 (LSTM) (None, None, 128) 111104   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_1 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
lstm\_2 (LSTM) (None, 128) 131584   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_2 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_1 (Dense) (None, 88) 11352   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_1 (Activation) (None, 88) 0   
=================================================================  
Total params: 254,040  
Trainable params: 254,040  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Erratic data was found, was able to regenerate the audio by eliminating the visible discrepancies but not at all melodious

**Expt 2-**

Hidden layers= 128

Database=Nottingham

Epochs=111

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 LSTMs and a fully connected layer

Prime length=25 and generation length=900

**Layer (type) Output Shape Param #**=================================================================  
lstm\_1 (LSTM) (None, None, 128) 111104   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_1 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
lstm\_2 (LSTM) (None, 128) 131584   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_2 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_1 (Dense) (None, 88) 11352   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_1 (Activation) (None, 88) 0   
=================================================================  
Total params: 254,040  
Trainable params: 254,040  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy = 0.9927

Validation accuracy= 0.47

Data only had one or two minor discrepancies, the song produced was melodious

**Expt 3 -**

Hidden layers= 128

Database=Nottingham

Epochs=238

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 LSTMs and a fully connected layer

Prime length=25 and generation length=900

**Layer (type) Output Shape Param #**=================================================================  
lstm\_1 (LSTM) (None, None, 128) 111104   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_1 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
lstm\_2 (LSTM) (None, 128) 131584   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_2 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_1 (Dense) (None, 88) 11352   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_1 (Activation) (None, 88) 0   
=================================================================  
Total params: 254,040  
Trainable params: 254,040  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy = 0.9962

Validation accuracy= 0.5

The music got a lot complex. It was sophiticated yet, it began to lose its essence

**Expt 4 -**

Hidden layers= 128

Database=Nottingham

Epochs=100

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 simpleRNNs and a fully connected layer

Prime length=25 and generation length=900

**Layer (type) Output Shape Param #**=================================================================  
simple\_rnn\_1 (SimpleRNN) (None, None, 128) 27776   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_5 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
simple\_rnn\_2 (SimpleRNN) (None, 128) 32896   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_6 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_3 (Dense) (None, 88) 11352   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_3 (Activation) (None, 88) 0   
=================================================================  
Total params: 72,024  
Trainable params: 72,024  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy = 0.9314

Validation accuracy= 0.532

Unreadable data

**Expt 5 -**

Hidden layers= 128

Database=Nottingham

Epochs=150

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 simpleRNNs and a fully connected layer

Prime length=25 and generation length=900

**Layer (type) Output Shape Param #**=================================================================  
simple\_rnn\_1 (SimpleRNN) (None, None, 128) 27776   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_5 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
simple\_rnn\_2 (SimpleRNN) (None, 128) 32896   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_6 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_3 (Dense) (None, 88) 11352   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_3 (Activation) (None, 88) 0   
=================================================================  
Total params: 72,024  
Trainable params: 72,024  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy = 0.9312

Validation accuracy= 0.4962

Perfectly readable data with no required modifications in the abc format. The song was little less melodious and repetitive of its own patterns(not on the same notes). Slope of increase of accuracy is very small in simpleRNNs. The accuracy is max 0.944 in the iterations

**Expt 6 -**

Hidden layers= 128

Database=Nottingham

Epochs=100

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 GRUs and a fully connected layer

Prime length=25 and generation length=900

**Layer (type) Output Shape Param #**=================================================================  
gru\_8 (GRU) (None, None, 128) 83328   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_19 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
gru\_9 (GRU) (None, 128) 98688   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_20 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_11 (Dense) (None, 88) 11352   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_11 (Activation) (None, 88) 0   
=================================================================  
Total params: 193,368  
Trainable params: 193,368  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9902

Validation accuracy = 0.54

The generated output needed lots of editing before it could be used by the system and the song generated was not melodious

**Expt 7 -**

Hidden layers= 128

Database=Nottingham

Epochs=150

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 GRUs and a fully connected layer

Prime length=25 and generation length=900

**Layer (type) Output Shape Param #**=================================================================  
gru\_8 (GRU) (None, None, 128) 83328   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_19 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
gru\_9 (GRU) (None, 128) 98688   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_20 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_11 (Dense) (None, 88) 11352   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_11 (Activation) (None, 88) 0   
=================================================================  
Total params: 193,368  
Trainable params: 193,368  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9902

Validation accuracy = 0.54

The generated output needed no editing before it could be used by the system and the song generated was a little melodious

**Expt 8 -**

Hidden layers= 128

Database=Nottingham

Epochs=200

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 GRUs and a fully connected layer

Prime length=25 and generation length=900

**Layer (type) Output Shape Param #**=================================================================  
gru\_8 (GRU) (None, None, 128) 83328   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_19 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
gru\_9 (GRU) (None, 128) 98688   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_20 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_11 (Dense) (None, 88) 11352   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_11 (Activation) (None, 88) 0   
=================================================================  
Total params: 193,368  
Trainable params: 193,368  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.99

Validation accuracy = 0.50

Song generated was melodious but required editing

**Expt 9 -**

Hidden layers= 128

Database=Nottingham

Epochs=250

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 GRUs and a fully connected layer

Prime length=25 and generation length=900

**Layer (type) Output Shape Param #**=================================================================  
gru\_8 (GRU) (None, None, 128) 83328   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_19 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
gru\_9 (GRU) (None, 128) 98688   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_20 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_11 (Dense) (None, 88) 11352   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_11 (Activation) (None, 88) 0   
=================================================================  
Total params: 193,368  
Trainable params: 193,368  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9938

Validation accuracy = 0.51

The generated output needed no editing before it could be used by the system and the song generated was melodious but required editing

**Expt 10 -**

Hidden layers= 256

Database=Nottingham

Epochs=30

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 LSTMs and a fully connected layer

Prime length=25 and generation length=900

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
**Layer (type) Output Shape Param #**    
=================================================================  
lstm\_5 (LSTM) (None, None, 256) 353280   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_12 (Dropout) (None, None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
lstm\_6 (LSTM) (None, 256) 525312   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_13 (Dropout) (None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_6 (Dense) (None, 88) 22616   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_6 (Activation) (None, 88) 0   
=================================================================  
Total params: 901,208  
Trainable params: 901,208  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9955

Validation accuracy = 0.52

The sheet music wasn’t perfectly readable, nor was it too melodic but it got readable after few modifications. It included double notes for the first time.

**Expt 11 -**

Hidden layers= 256

Database=Nottingham

Epochs= 62

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 LSTMs and a fully connected layer

Prime length=25 and generation length=900

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
**Layer (type) Output Shape Param #**    
=================================================================  
lstm\_5 (LSTM) (None, None, 256) 353280   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_12 (Dropout) (None, None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
lstm\_6 (LSTM) (None, 256) 525312   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_13 (Dropout) (None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_6 (Dense) (None, 88) 22616   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_6 (Activation) (None, 88) 0   
=================================================================  
Total params: 901,208  
Trainable params: 901,208  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9947

Validation accuracy = 0.5

The sheet music wasn’t perfectly readable. It was still melodic. It got readable after few modifications. Didnt include double notes

**Expt 12 -**

Hidden layers= 256

Database=Nottingham

Epochs= 98

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 LSTMs and a fully connected layer

Prime length=25 and generation length=900

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
**Layer (type) Output Shape Param #**    
=================================================================  
lstm\_5 (LSTM) (None, None, 256) 353280   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_12 (Dropout) (None, None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
lstm\_6 (LSTM) (None, 256) 525312   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_13 (Dropout) (None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_6 (Dense) (None, 88) 22616   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_6 (Activation) (None, 88) 0   
=================================================================  
Total params: 901,208  
Trainable params: 901,208  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9964

Validation accuracy = 0.5

The generated output required no editing till song number 3 and made 3 melodic songs in the first go and hence performed very good

**Expt 13 -**

Hidden layers= 256

Database=Nottingham

Epochs= 171

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 LSTMs and a fully connected layer

Prime length=25 and generation length=900

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
**Layer (type) Output Shape Param #**    
=================================================================  
lstm\_5 (LSTM) (None, None, 256) 353280   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_12 (Dropout) (None, None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
lstm\_6 (LSTM) (None, 256) 525312   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_13 (Dropout) (None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_6 (Dense) (None, 88) 22616   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_6 (Activation) (None, 88) 0   
=================================================================  
Total params: 901,208  
Trainable params: 901,208  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9966

Validation accuracy = 0.5

Sheet music was perfectly readable with good melody

**Expt 14 -**

Hidden layers= 256

Database=Nottingham

Epochs= 200

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 2 LSTMs and a fully connected layer

Prime length=25 and generation length=900

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
**Layer (type) Output Shape Param #**    
=================================================================  
lstm\_5 (LSTM) (None, None, 256) 353280   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_12 (Dropout) (None, None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
lstm\_6 (LSTM) (None, 256) 525312   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_13 (Dropout) (None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_6 (Dense) (None, 88) 22616   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_6 (Activation) (None, 88) 0   
=================================================================  
Total params: 901,208  
Trainable params: 901,208  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9970

Validation accuracy = 0.5

Sheet music was perfectly readable with good melody

**Expt 15 -**

Hidden layers= 256

Database=Nottingham

Epochs= 100

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 1 LSTM with return\_sequence =True and a fully connected layer

Prime length=25 and generation length=900

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Layer (type) Output Shape Param #   
=================================================================  
lstm\_7 (LSTM) (None, None, 256) 353280   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_14 (Dropout) (None, None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_7 (Dense) (None, None, 88) 22616   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_7 (Activation) (None, None, 88) 0   
=================================================================  
Total params: 375,896  
Trainable params: 375,896  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9970

Validation accuracy = 0.5

Sheet music needed small editings but it mad very good melody

**Expt 16 -**

Hidden layers= 256

Database=Nottingham

Epochs= 150

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 1 LSTM with return\_sequence =True and a fully connected layer

Prime length=25 and generation length=900

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Layer (type) Output Shape Param #   
=================================================================  
lstm\_7 (LSTM) (None, None, 256) 353280   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_14 (Dropout) (None, None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_7 (Dense) (None, None, 88) 22616   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_7 (Activation) (None, None, 88) 0   
=================================================================  
Total params: 375,896  
Trainable params: 375,896  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9962

Validation accuracy = 0.52

Sheet music needed no editings but it was not very melodic

**Expt 17 -**

Hidden layers= 256

Database=Nottingham

Epochs= 200

Drop out=0.1

Batch size=50

Optimizer = Adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations = tanh

Used 1 LSTM with return\_sequence =True and a fully connected layer

Prime length=25 and generation length=900

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Layer (type) Output Shape Param #   
=================================================================  
lstm\_7 (LSTM) (None, None, 256) 353280   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_14 (Dropout) (None, None, 256) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_7 (Dense) (None, None, 88) 22616   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_7 (Activation) (None, None, 88) 0   
=================================================================  
Total params: 375,896  
Trainable params: 375,896  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9966

Validation accuracy = 0.52

Sheet music needed no editings but it was mediocre melodic

**Expt 18 -**

Hidden layers= 128

Database=Database2

Epochs=100

Drop out=0.1

Batch size=128

Optimizer=adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations= tanh

Used 2 LSTMs and a fully connected layer

Prime length=25 and generation length=900

**Model Structure**

**Layer (type) Output Shape Param #**=================================================================  
lstm\_1 (LSTM) (None, None, 128) 113664   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_1 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
lstm\_2 (LSTM) (None, 128) 131584   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_2 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_1 (Dense) (None, 93) 11997   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_1 (Activation) (None, 93) 0   
=================================================================  
Total params: 257,245  
Trainable params: 257,245  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9702

Validation accuracy = 0.41

The produced music is perfectly readable, is very soothing and produces multiple songs with ease. It is perfect in all sense for a musician.

**Expt 19 -**

Hidden layers= 128

Database=Database2

Epochs=150

Drop out=0.1

Batch size=128

Optimizer=adam

loss=categorical\_crossentropy

metrics=accuracy

final activation=softmax

Internal activations= tanh

Used 2 LSTMs and a fully connected layer

Prime length=25 and generation length=900

**Model Structure**

**Layer (type) Output Shape Param #**=================================================================  
lstm\_1 (LSTM) (None, None, 128) 113664   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_1 (Dropout) (None, None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
lstm\_2 (LSTM) (None, 128) 131584   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dropout\_2 (Dropout) (None, 128) 0   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
dense\_1 (Dense) (None, 93) 11997   
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
activation\_1 (Activation) (None, 93) 0   
=================================================================  
Total params: 257,245  
Trainable params: 257,245  
Non-trainable params: 0  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Training accuracy= 0.9788

Validation accuracy = 0.4229

The produced music is perfectly readable, is very soothing and produces multiple songs with ease. It is perfect in all sense for a musician.