

ACML Homework

Music by RNNs

Ibrahim Hadzic (i6200920), Alexander Reisach (i6197692)

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1 Getting Things Running

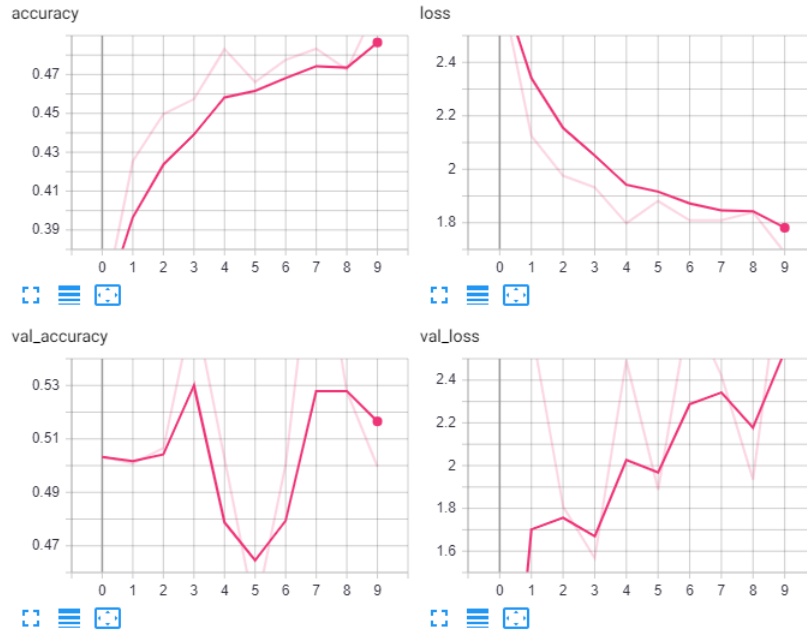


Figure 1: Tensorboard output for default settings

In order to test different and more computationally intensive settings, we use the Aachen cluster's gpu. We use keras' CuDNNLSTM layers instead of regular LSTM layers to take advantage of the accelerated linear algebra (XLA) optimizations.

2 Experiments

Ever since the term "random guessing" has come out of fashion, we have specialized in "principled experimentation" instead, and this project is no exception. Following best practices from the internet (c.f. 2), we experimented in particular with the following parameters:

- number of (LSTM) layers
- nodes per (LSTM) layer
- input window size
- number of training epochs

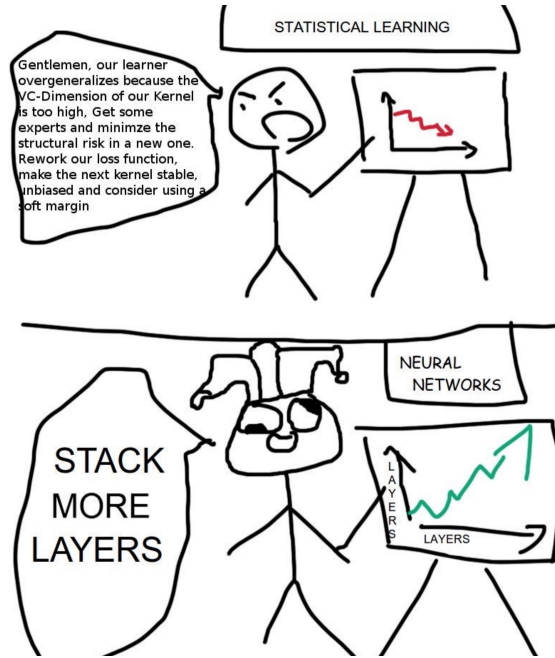


Figure 2: Good advice from the internet

In this spirit, we ran our model with the following settings:

rnn_size	num_layers	learning_rate	window_size	batch_size	num_epochs	dropout	optimizer	grad_clip
64	1	None	20	32	10	0.2	adam	5
128	1	None	64	32	50	0.2	adam	5
256	2	None	256	32	100	0.5	adam	5

Figure 3: Experiment Schedule

3 Results

All trained models can be found in the folder *experiments*. Each model contains a subfolder *generated* with a *.mid* file containing model generated output using the song "In the year 2525" (not part of the training dataset).