Machine Learning Homework 4

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1 Experiment

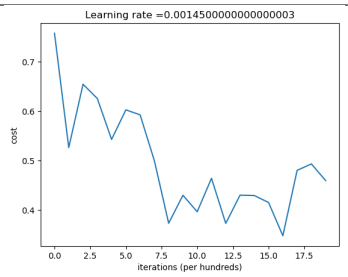
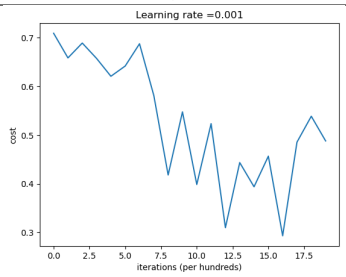
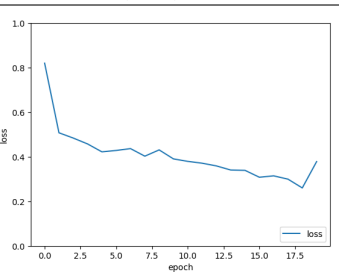
	linear model	CNN model	TF CNN model
epochs	20	20	20
training time	0.9s	8m 41s	16.4s
accuracy training	0.804	0.785	0.8438
accuracy validation	0.866	0.875	0.8167
# parameters	32,833	133,617	1,191,103
loss curve			
others			

Table 1: Caption

2 Advanced

Since we are implementing a binary classifier, I chose BinaryCrossentropy as my loss function. After experiment, Nadam is the best optimizer. Here is my final model.

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 Layer (type)                 Output Shape              Param #
=================================================================
 conv2d_129 (Conv2D)          (None, 32, 32, 32)        320

 batch_normalization_71 (Bat  (None, 32, 32, 32)        128
 chNormalization)

 max_pooling2d_75 (MaxPoolin  (None, 16, 16, 32)        0
 g2D)

 conv2d_130 (Conv2D)          (None, 16, 16, 32)        9248

 batch_normalization_72 (Bat  (None, 16, 16, 32)        128
 chNormalization)

 max_pooling2d_76 (MaxPoolin  (None, 8, 8, 32)          0
 g2D)

 flatten_50 (Flatten)         (None, 2048)              0

 dense_147 (Dense)            (None, 512)               1049088

 dense_148 (Dense)            (None, 256)               131328

 dense_149 (Dense)            (None, 1)                 257

=================================================================
Total params: 1,190,497
Trainable params: 1,190,369
Non-trainable params: 128
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