Deep Learning in Biomedical Image Analysis Project 2 林祐安

Dataset	Cats_vs_dogs
Number of conv. layers	5
Number of full connected layers	3
Kernel size	3*3
Input shape	256*256*3
Number of training images	2000
Number of testing images	300
epochs	20

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Layer (type)                 Output Shape              Param #
=================================================================
conv2d_11 (Conv2D)           (None, 256, 256, 8)       224

batch_normalization_8 (Batc  (None, 256, 256, 8)       32
hNormalization)

conv2d_12 (Conv2D)           (None, 254, 254, 8)       584

batch_normalization_9 (Batc  (None, 254, 254, 8)       32
hNormalization)

conv2d_13 (Conv2D)           (None, 252, 252, 16)      1168

dropout_1 (Dropout)          (None, 252, 252, 16)      0

conv2d_14 (Conv2D)           (None, 250, 250, 16)      2320

max_pooling2d_4 (MaxPooling  (None, 83, 83, 16)        0
2D)

conv2d_15 (Conv2D)           (None, 81, 81, 32)        4640

max_pooling2d_5 (MaxPooling  (None, 27, 27, 32)        0
2D)

flatten_3 (Flatten)          (None, 23328)             0

dense_3 (Dense)              (None, 64)                1493056

dense_4 (Dense)              (None, 8)                 520

dense_5 (Dense)              (None, 1)                 9

=================================================================
Total params: 1,502,585
Trainable params: 1,502,553
Non-trainable params: 32
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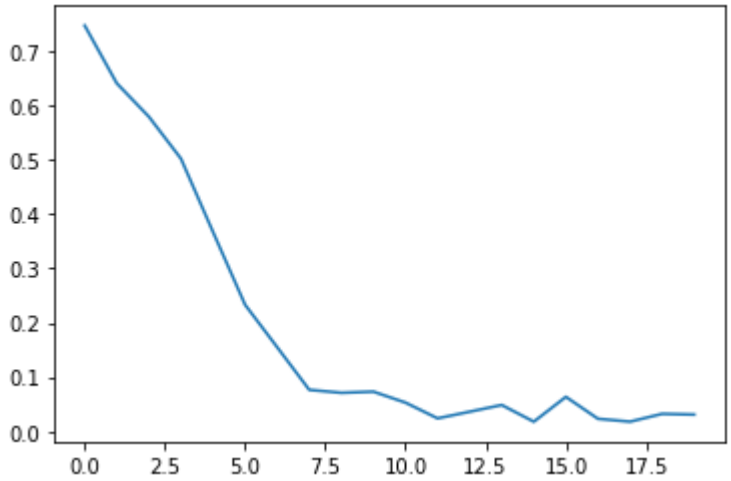
Data preprocessing

1. the first 3000-th images are set as training set and the 3001-st to 3300-th images are set as testing set.
2. images are reshaped into 256*256

loss curve

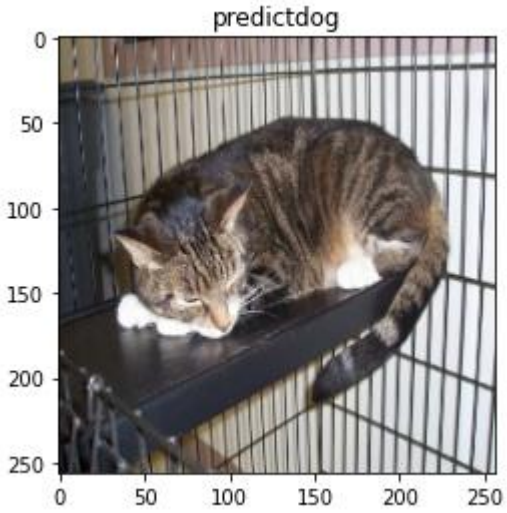


x-direction : epoch

y-direction: loss

testing set

1. loss: 1.7002
2. accuracy: 71%



Although we add some dropout layers to avoid overfitting, it seems not to work well. Some advanced skills like L1 or L2 regularization would be taken into account.