Deep learning and applications practice #4

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Code implementation & Results

I implemented ‘class-practice4.ipynb’ file and I ran this file in google colab.
Before run this file, you should set appropriate value for 1) the number of training samples, 2) the number of test samples, 3) epoch, 4) batch_size.

```
m=1000
n=100
epochs_num=1000
batch_sz=1000
```

Also, I chose to run this file in cpu or gpu.
for gpu, put ‘/device:GPU:0’ and change google colab setting.

```
with tf.device('/device:GPU:0'):
```

for cpu, put ‘/cpu:0’ like below.

```
with tf.device('/cpu:0'):
```

table1

	BinaryCrossentropy	MeanSquaredError
Accuracy(with train set)	99.4	98.7
Accuracy(with test set)	100	99

table1 lr = 3.7

table2

	SGD result	RMSProp	Adam
Accuracy(with train set)	99.4	98.7	99.3
Accuracy(with test set)	100	100	100
Train time [sec]	8.886951208114624	9.04956841468811	8.101464986801147
Inference(test) time [sec]	0.2366633415222168	0.21216893196105957	0.5588419437408447
Loss type	BinaryCrossentropy	BinaryCrossentropy	BinaryCrossentropy

table2 lr
sgd result : 3.7
rmsprop : 2.5
Adam : 2.7

table3

	Your Python Result (in practice#3)	Your best results (CPU version)	Your best results (GPU version)
Accuracy(with train set)	98.7	99.8	99.8
Accuracy(with test set)	99	100	100
Train time [sec]	0.10586905479431152	7.053146600723267	12.786412239074707
Inference(test) time [sec]	4.1961669921875e-05 (==0.000041961669921875)	0.18127202987670898	0.13647890090942383
Loss type	BinaryCrossentropy	BinaryCrossentropy	BinaryCrossentropy
Optimizer type	SGD	SGD	SGD

table3 lr
python : 3.5
cpu : 3.7
gpu : 3.5

table4

	Mini-batch = 1	Mini-batch = 32	Mini-batch = 128	Mini-batch = 1000
Accuracy(with train set)	98.9	99.5	99.8	99.5

Accuracy(with test set)	100	100	100	100
Train time [sec]	2118.005527019500 7	95.46494197845459	30.736166954040527	12.277243614196777
Inference(test) time [sec]	0.14018011093139648	0.12376618385314941	0.131209135055542	0.1316993236541748
Loss type	BinaryCrossentropy	BinaryCrossentropy	BinaryCrossentropy	BinaryCrossentropy
Optimizer type	SGD	SGD	SGD	SGD

table 4 lr
all : 3.7