

## File - att2

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1 ssh://root@103.254.67.181:10006/usr/bin/python -u /home/sunfengzhen/pycharm/attention/att2.py
2 Using TensorFlow backend.
3 X_train shape: (60000, 28, 28)
4 X_test shape: (10000, 28, 28)
5
6 Layer (type)                Output Shape                Param #    Connected to
7 -----
8 input_input (InputLayer)    (None, 28, 28)             0          input_input[0][0]
9
10 lstm_layer (LSTM)           (None, 28, 32)             7808       lstm_layer[0][0]
11
12 att_dense (Dense)           (None, 28, 1)              33         att_dense[0][0]
13
14 att_flat (Flatten)          (None, 28)                 0          att_dense[0][0]
15
16 att_act (Activation)        (None, 28)                 0          att_flat[0][0]
17
18 att_repeat (RepeatVector)   (None, 32, 28)             0          att_act[0][0]
19
20 att_vec (Permute)           (None, 28, 32)             0          att_repeat[0][0]
21
22 att_mul (Multiply)          (None, 28, 32)             0          lstm_layer[0][0]
23                                     att_vec[0][0]
24
25 out_flat (Flatten)          (None, 896)                0          att_mul[0][0]
26
27 out_dense (Dense)           (None, 10)                 8970       out_flat[0][0]
28 =====
29 Total params: 16,811
30 Trainable params: 16,811
31 Non-trainable params: 0
32
33 None
34 Training-----
35 Epoch 1/100
36 2019-10-18 09:41:20.106873: I tensorflow/core/platform/cpu_feature_guard.cc:141] Your CPU supports
  instructions that this TensorFlow binary was not compiled to use: AVX2 FMA
37 2019-10-18 09:41:20.392897: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1432] Found device 0 with
  properties:
38 name: GeForce GTX 1080 Ti major: 6 minor: 1 memoryClockRate(GHz): 1.582
39 pciBusID: 0000:82:00.0
40 totalMemory: 10.92GiB freeMemory: 10.76GiB
41 2019-10-18 09:41:20.392965: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1511] Adding visible gpu
  devices: 0
42 2019-10-18 09:41:22.334749: I tensorflow/core/common_runtime/gpu/gpu_device.cc:982] Device interconnect
  StreamExecutor with strength 1 edge matrix:
43 2019-10-18 09:41:22.334853: I tensorflow/core/common_runtime/gpu/gpu_device.cc:988] 0
44 2019-10-18 09:41:22.334873: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1001] 0: N
45 2019-10-18 09:41:22.335379: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1115] Created TensorFlow
  device (/job:localhost/replica:0/task:0/device:GPU:0 with 10409 MB memory) -> physical GPU (device: 0,
  name: GeForce GTX 1080 Ti, pci bus id: 0000:82:00.0, compute capability: 6.1)
46 - 267s - loss: 0.6204 - acc: 0.8310
47 Epoch 2/100
48 - 259s - loss: 0.1977 - acc: 0.9431
49 Epoch 3/100
50 - 262s - loss: 0.1463 - acc: 0.9579
51 Epoch 4/100
52 - 261s - loss: 0.1172 - acc: 0.9655
53 Epoch 5/100
54 - 258s - loss: 0.0997 - acc: 0.9713
55 Epoch 6/100

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File - att2

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56 - 247s - loss: 0.0885 - acc: 0.9736
57 Epoch 7/100
58 - 255s - loss: 0.0775 - acc: 0.9770
59 Epoch 8/100
60 - 263s - loss: 0.0705 - acc: 0.9791
61 Epoch 9/100
62 - 261s - loss: 0.0637 - acc: 0.9811
63 Epoch 10/100
64 - 261s - loss: 0.0581 - acc: 0.9825
65 Epoch 11/100
66 - 262s - loss: 0.0539 - acc: 0.9840
67 Epoch 12/100
68 - 262s - loss: 0.0502 - acc: 0.9847
69 Epoch 13/100
70 - 263s - loss: 0.0467 - acc: 0.9858
71 Epoch 14/100
72 - 263s - loss: 0.0432 - acc: 0.9868
73 Epoch 15/100
74 - 264s - loss: 0.0418 - acc: 0.9876
75 Epoch 16/100
76 - 266s - loss: 0.0383 - acc: 0.9886
77 Epoch 17/100
78 - 267s - loss: 0.0367 - acc: 0.9889
79 Epoch 18/100
80 - 268s - loss: 0.0347 - acc: 0.9891
81 Epoch 19/100
82 - 268s - loss: 0.0328 - acc: 0.9904
83 Epoch 20/100
84 - 271s - loss: 0.0319 - acc: 0.9903
85 Epoch 21/100
86 - 270s - loss: 0.0295 - acc: 0.9913
87 Epoch 22/100
88 - 270s - loss: 0.0282 - acc: 0.9914
89 Epoch 23/100
90 - 271s - loss: 0.0272 - acc: 0.9917
91 Epoch 24/100
92 - 271s - loss: 0.0262 - acc: 0.9922
93 Epoch 25/100
94 - 271s - loss: 0.0249 - acc: 0.9923
95 Epoch 26/100
96 - 272s - loss: 0.0237 - acc: 0.9927
97 Epoch 27/100
98 - 271s - loss: 0.0234 - acc: 0.9930
99 Epoch 28/100
100 - 271s - loss: 0.0217 - acc: 0.9940
101 Epoch 29/100
102 - 271s - loss: 0.0209 - acc: 0.9936
103 Epoch 30/100
104 - 272s - loss: 0.0204 - acc: 0.9939
105 Epoch 31/100
106 - 267s - loss: 0.0192 - acc: 0.9946
107 Epoch 32/100
108 - 266s - loss: 0.0193 - acc: 0.9945
109 Epoch 33/100
110 - 262s - loss: 0.0177 - acc: 0.9952
111 Epoch 34/100
112 - 262s - loss: 0.0172 - acc: 0.9951
113 Epoch 35/100
114 - 262s - loss: 0.0167 - acc: 0.9951
115 Epoch 36/100
116 - 261s - loss: 0.0164 - acc: 0.9954
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File - att2

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117 Epoch 37/100
118   - 263s - loss: 0.0163 - acc: 0.9953
119 Epoch 38/100
120   - 262s - loss: 0.0145 - acc: 0.9958
121 Epoch 39/100
122   - 263s - loss: 0.0141 - acc: 0.9965
123 Epoch 40/100
124   - 264s - loss: 0.0153 - acc: 0.9954
125 Epoch 41/100
126   - 263s - loss: 0.0139 - acc: 0.9960
127 Epoch 42/100
128   - 261s - loss: 0.0137 - acc: 0.9961
129 Epoch 43/100
130   - 260s - loss: 0.0125 - acc: 0.9966
131 Epoch 44/100
132   - 261s - loss: 0.0133 - acc: 0.9961
133 Epoch 45/100
134   - 262s - loss: 0.0124 - acc: 0.9966
135 Epoch 46/100
136   - 262s - loss: 0.0121 - acc: 0.9965
137 Epoch 47/100
138   - 262s - loss: 0.0122 - acc: 0.9967
139 Epoch 48/100
140   - 255s - loss: 0.0112 - acc: 0.9969
141 Epoch 49/100
142   - 308s - loss: 0.0110 - acc: 0.9969
143 Epoch 50/100
144   - 306s - loss: 0.0112 - acc: 0.9969
145 Epoch 51/100
146   - 298s - loss: 0.0102 - acc: 0.9972
147 Epoch 52/100
148   - 301s - loss: 0.0094 - acc: 0.9976
149 Epoch 53/100
150   - 301s - loss: 0.0095 - acc: 0.9974
151 Epoch 54/100
152   - 288s - loss: 0.0094 - acc: 0.9975
153 Epoch 55/100
154   - 277s - loss: 0.0094 - acc: 0.9976
155 Epoch 56/100
156   - 281s - loss: 0.0097 - acc: 0.9973
157 Epoch 57/100
158   - 273s - loss: 0.0098 - acc: 0.9973
159 Epoch 58/100
160   - 216s - loss: 0.0083 - acc: 0.9979
161 Epoch 59/100
162   - 219s - loss: 0.0085 - acc: 0.9977
163 Epoch 60/100
164   - 248s - loss: 0.0086 - acc: 0.9977
165 Epoch 61/100
166   - 243s - loss: 0.0081 - acc: 0.9978
167 Epoch 62/100
168   - 236s - loss: 0.0076 - acc: 0.9980
169 Epoch 63/100
170   - 237s - loss: 0.0071 - acc: 0.9983
171 Epoch 64/100
172   - 237s - loss: 0.0089 - acc: 0.9973
173 Epoch 65/100
174   - 237s - loss: 0.0070 - acc: 0.9982
175 Epoch 66/100
176   - 238s - loss: 0.0071 - acc: 0.9981
177 Epoch 67/100
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File - att2

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178 - 237s - loss: 0.0072 - acc: 0.9980
179 Epoch 68/100
180 - 236s - loss: 0.0069 - acc: 0.9983
181 Epoch 69/100
182 - 237s - loss: 0.0066 - acc: 0.9985
183 Epoch 70/100
184 - 237s - loss: 0.0077 - acc: 0.9980
185 Epoch 71/100
186 - 237s - loss: 0.0077 - acc: 0.9978
187 Epoch 72/100
188 - 238s - loss: 0.0064 - acc: 0.9983
189 Epoch 73/100
190 - 236s - loss: 0.0058 - acc: 0.9985
191 Epoch 74/100
192 - 237s - loss: 0.0060 - acc: 0.9984
193 Epoch 75/100
194 - 236s - loss: 0.0061 - acc: 0.9984
195 Epoch 76/100
196 - 237s - loss: 0.0065 - acc: 0.9981
197 Epoch 77/100
198 - 239s - loss: 0.0068 - acc: 0.9980
199 Epoch 78/100
200 - 237s - loss: 0.0065 - acc: 0.9983
201 Epoch 79/100
202 - 236s - loss: 0.0053 - acc: 0.9986
203 Epoch 80/100
204 - 237s - loss: 0.0053 - acc: 0.9986
205 Epoch 81/100
206 - 237s - loss: 0.0055 - acc: 0.9986
207 Epoch 82/100
208 - 237s - loss: 0.0067 - acc: 0.9981
209 Epoch 83/100
210 - 236s - loss: 0.0053 - acc: 0.9988
211 Epoch 84/100
212 - 236s - loss: 0.0060 - acc: 0.9984
213 Epoch 85/100
214 - 237s - loss: 0.0058 - acc: 0.9984
215 Epoch 86/100
216 - 236s - loss: 0.0056 - acc: 0.9985
217 Epoch 87/100
218 - 237s - loss: 0.0052 - acc: 0.9985
219 Epoch 88/100
220 - 236s - loss: 0.0049 - acc: 0.9988
221 Epoch 89/100
222 - 237s - loss: 0.0058 - acc: 0.9985
223 Epoch 90/100
224 - 237s - loss: 0.0057 - acc: 0.9985
225 Epoch 91/100
226 - 236s - loss: 0.0046 - acc: 0.9988
227 Epoch 92/100
228 - 237s - loss: 0.0055 - acc: 0.9985
229 Epoch 93/100
230 - 237s - loss: 0.0052 - acc: 0.9984
231 Epoch 94/100
232 - 238s - loss: 0.0049 - acc: 0.9989
233 Epoch 95/100
234 - 237s - loss: 0.0045 - acc: 0.9989
235 Epoch 96/100
236 - 237s - loss: 0.0054 - acc: 0.9985
237 Epoch 97/100
238 - 237s - loss: 0.0050 - acc: 0.9988

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File - att2

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239 Epoch 98/100
240   - 236s - loss: 0.0050 - acc: 0.9987
241 Epoch 99/100
242   - 237s - loss: 0.0040 - acc: 0.9990
243 Epoch 100/100
244   - 238s - loss: 0.0043 - acc: 0.9988
245 Testing-----
246   32/10000 [.....] - ETA: 1:17
247  128/10000 [.....] - ETA: 23s
248  224/10000 [.....] - ETA: 16s
249  320/10000 [.....] - ETA: 13s
250  416/10000 [>.....] - ETA: 11s
251  512/10000 [>.....] - ETA: 10s
252  608/10000 [>.....] - ETA: 9s
253  672/10000 [= >.....] - ETA: 9s
254  768/10000 [= >.....] - ETA: 9s
255  864/10000 [= >.....] - ETA: 8s
256  960/10000 [= >.....] - ETA: 8s
257 1056/10000 [== >.....] - ETA: 8s
258 1152/10000 [== >.....] - ETA: 7s
259 1248/10000 [== >.....] - ETA: 7s
260 1344/10000 [=== >.....] - ETA: 7s
261 1408/10000 [=== >.....] - ETA: 7s
262 1504/10000 [=== >.....] - ETA: 7s
263 1600/10000 [=== >.....] - ETA: 7s
264 1632/10000 [=== >.....] - ETA: 7s
265 1728/10000 [==== >.....] - ETA: 6s
266 1824/10000 [==== >.....] - ETA: 6s
267 1920/10000 [==== >.....] - ETA: 6s
268 1984/10000 [==== >.....] - ETA: 6s
269 2080/10000 [==== >.....] - ETA: 6s
270 2176/10000 [==== >.....] - ETA: 6s
271 2240/10000 [==== >.....] - ETA: 6s
272 2304/10000 [==== >.....] - ETA: 6s
273 2368/10000 [==== >.....] - ETA: 6s
274 2464/10000 [==== >.....] - ETA: 6s
275 2528/10000 [==== >.....] - ETA: 6s
276 2592/10000 [==== >.....] - ETA: 6s
277 2656/10000 [==== >.....] - ETA: 6s
278 2720/10000 [==== >.....] - ETA: 6s
279 2816/10000 [==== >.....] - ETA: 6s
280 2912/10000 [==== >.....] - ETA: 5s
281 3008/10000 [==== >.....] - ETA: 5s
282 3104/10000 [==== >.....] - ETA: 5s
283 3200/10000 [==== >.....] - ETA: 5s
284 3296/10000 [==== >.....] - ETA: 5s
285 3392/10000 [==== >.....] - ETA: 5s
286 3488/10000 [==== >.....] - ETA: 5s
287 3584/10000 [==== >.....] - ETA: 5s
288 3680/10000 [==== >.....] - ETA: 5s
289 3776/10000 [==== >.....] - ETA: 4s
290 3872/10000 [==== >.....] - ETA: 4s
291 3968/10000 [==== >.....] - ETA: 4s
292 4064/10000 [==== >.....] - ETA: 4s
293 4160/10000 [==== >.....] - ETA: 4s
294 4256/10000 [==== >.....] - ETA: 4s
295 4320/10000 [==== >.....] - ETA: 4s
296 4416/10000 [==== >.....] - ETA: 4s
297 4512/10000 [==== >.....] - ETA: 4s
298 4608/10000 [==== >.....] - ETA: 4s
299 4704/10000 [==== >.....] - ETA: 4s
```

```
300 4800/10000 [=====>.....] - ETA: 4s
301 4864/10000 [=====>.....] - ETA: 4s
302 4928/10000 [=====>.....] - ETA: 3s
303 5024/10000 [=====>.....] - ETA: 3s
304 5088/10000 [=====>.....] - ETA: 3s
305 5152/10000 [=====>.....] - ETA: 3s
306 5248/10000 [=====>.....] - ETA: 3s
307 5344/10000 [=====>.....] - ETA: 3s
308 5440/10000 [=====>.....] - ETA: 3s
309 5504/10000 [=====>.....] - ETA: 3s
310 5568/10000 [=====>.....] - ETA: 3s
311 5632/10000 [=====>.....] - ETA: 3s
312 5728/10000 [=====>.....] - ETA: 3s
313 5824/10000 [=====>.....] - ETA: 3s
314 5888/10000 [=====>.....] - ETA: 3s
315 5952/10000 [=====>.....] - ETA: 3s
316 6016/10000 [=====>.....] - ETA: 3s
317 6112/10000 [=====>.....] - ETA: 3s
318 6208/10000 [=====>.....] - ETA: 2s
319 6304/10000 [=====>.....] - ETA: 2s
320 6400/10000 [=====>.....] - ETA: 2s
321 6496/10000 [=====>.....] - ETA: 2s
322 6592/10000 [=====>.....] - ETA: 2s
323 6688/10000 [=====>.....] - ETA: 2s
324 6784/10000 [=====>.....] - ETA: 2s
325 6880/10000 [=====>.....] - ETA: 2s
326 6976/10000 [=====>.....] - ETA: 2s
327 7072/10000 [=====>.....] - ETA: 2s
328 7168/10000 [=====>.....] - ETA: 2s
329 7264/10000 [=====>.....] - ETA: 2s
330 7360/10000 [=====>.....] - ETA: 2s
331 7456/10000 [=====>.....] - ETA: 1s
332 7552/10000 [=====>.....] - ETA: 1s
333 7648/10000 [=====>.....] - ETA: 1s
334 7712/10000 [=====>.....] - ETA: 1s
335 7808/10000 [=====>.....] - ETA: 1s
336 7872/10000 [=====>.....] - ETA: 1s
337 7936/10000 [=====>.....] - ETA: 1s
338 8032/10000 [=====>.....] - ETA: 1s
339 8128/10000 [=====>.....] - ETA: 1s
340 8192/10000 [=====>.....] - ETA: 1s
341 8288/10000 [=====>.....] - ETA: 1s
342 8352/10000 [=====>.....] - ETA: 1s
343 8448/10000 [=====>.....] - ETA: 1s
344 8544/10000 [=====>.....] - ETA: 1s
345 8608/10000 [=====>.....] - ETA: 1s
346 8704/10000 [=====>.....] - ETA: 0s
347 8768/10000 [=====>.....] - ETA: 0s
348 8832/10000 [=====>.....] - ETA: 0s
349 8896/10000 [=====>.....] - ETA: 0s
350 8960/10000 [=====>.....] - ETA: 0s
351 9056/10000 [=====>.....] - ETA: 0s
352 9120/10000 [=====>.....] - ETA: 0s
353 9184/10000 [=====>.....] - ETA: 0s
354 9248/10000 [=====>.....] - ETA: 0s
355 9344/10000 [=====>.....] - ETA: 0s
356 9440/10000 [=====>.....] - ETA: 0s
357 9536/10000 [=====>.....] - ETA: 0s
358 9632/10000 [=====>.....] - ETA: 0s
359 9728/10000 [=====>.....] - ETA: 0s
360 9824/10000 [=====>.....] - ETA: 0s
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File - att2

```
361 9920/10000 [=====>.] - ETA: 0s
362 10000/10000 [=====] - 8s 765us/step
363 test loss: 0.07658297103947989
364 test accuracy: 0.9834
365
366 Process finished with exit code 0
367
```