Importing all the necessary packages

In [1]:

```python
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
from keras.layers import Dense,Flatten,Dropout,LSTM
from keras.preprocessing import text
from keras.preprocessing import sequence
from keras.models import Sequential
import warnings
warnings.filterwarnings("ignore")
import re
import string
from nltk.corpus import stopwords
from nltk.stem import PorterStemmer
from nltk.stem.wordnet import WordNetLemmatizer
import os
#print(os.listdir("../input"))
```

Using TensorFlow backend.

In [19]:

```python
from google.colab import drive
drive.mount("/content/gdrive",force_remount=True)
```

Mounted at /content/gdrive

In [0]:

```python
import pickle
import gzip
import _pickle
with gzip.open('/content/gdrive/My Drive/amazon_food_reviews.pkl', 'rb') as handle:
    data = _pickle.load(handle)
```

In [0]:

```python
#amazon_data = pd.read_csv("Reviews.csv")
#df = amazon_data.copy()
```

In [0]:

```python
df.head()
```

Out[0]:

	Id	ProductId	UserId	ProfileName	HelpfulnessNumerator	HelpfulnessDenominator	Score	Time	Summary
0	1	B001E4KFG0	A3SGXH7AUHU8GW	delmartian	1	1	5	1303862400	Good Quality Dog Food
1	2	B00813GRG4	A1D87F6ZCVE5NK	dll pa	0	0	1	1346976000	Not as Advertised
				Natalia Corres					"Delight"

	Id	ProductId	UserId	ProfileName	HelpfulnessNumerator	HelpfulnessDenominator	Score	Time	Summary
2	3	B000LQOCH0	ABXLMWJIXXAIN	"Natalie Corres"	1	1	4	1219017600	Delight says it all
3	4	B000UA0QIQ	A395BORC6FGVXV	Karl	3	3	2	1307923200	Cough Medicine
4	5	B006K2ZZ7K	A1UQRSCLF8GW1T	Michael D. Bigham "M. Wassir"	0	0	5	1350777600	Great taffy

◄ | ▶

Data Cleaning and Deduplication

In [0]:

```python
df = df[df['Score']!=3]
```

In [0]:

```python
def polarity(data):
    if data >3:
        return(1)
    else:
        return(0)
df['Score'] = list(df['Score'].apply(polarity))
```

In [0]:

```python
sorted_data = df.sort_values('ProductId',axis=0,kind = 'quicksort',ascending = True,na_position='last')
df = sorted_data.drop_duplicates(subset={"UserId","ProfileName","Time","Text"}, keep='first', inplace=False)
```

In [0]:

```python
df = df[df.HelpfulnessNumerator<=df.HelpfulnessDenominator]
```

In [0]:

```python
# https://stackoverflow.com/a/47091490/4084039
import re

def decontracted(phrase):
    # specific
    phrase = re.sub(r"won't", "will not", phrase)
    phrase = re.sub(r"can\'t", "can not", phrase)

    # general
    phrase = re.sub(r"n\'t", " not", phrase)
    phrase = re.sub(r"\'re", " are", phrase)
    phrase = re.sub(r"\'s", " is", phrase)
    phrase = re.sub(r"\'d", " would", phrase)
    phrase = re.sub(r"\'ll", " will", phrase)
    phrase = re.sub(r"\'t", " not", phrase)
    phrase = re.sub(r"\'ve", " have", phrase)
    phrase = re.sub(r"\'m", " am", phrase)
    return phrase
```

In [0]:

```python
stopwords= set(['br', 'the', 'i', 'me', 'my', 'myself', 'we', 'our', 'ours', 'ourselves', 'you', "you're", "you've",\
            "you'll", "you'd", 'your', 'yours', 'yourself', 'yourselves', 'he', 'him', 'his', 'himself', \
            'she', "she's", 'her', 'hers', 'herself', 'it', "it's", 'its', 'itself', 'they', 'them',
```

```
'their',\
            'theirs', 'themselves', 'what', 'which', 'who', 'whom', 'this', 'that', "that'll",
'these', 'those', \
            'am', 'is', 'are', 'was', 'were', 'be', 'been', 'being', 'have', 'has', 'had', 'having',
'do', 'does', \
            'did', 'doing', 'a', 'an', 'the', 'and', 'but', 'if', 'or', 'because', 'as', 'until', '
while', 'of', \
            'at', 'by', 'for', 'with', 'about', 'against', 'between', 'into', 'through', 'during',
'before', 'after',\
            'above', 'below', 'to', 'from', 'up', 'down', 'in', 'out', 'on', 'off', 'over', 'under'
, 'again', 'further',\
            'then', 'once', 'here', 'there', 'when', 'where', 'why', 'how', 'all', 'any', 'both', 'e
ach', 'few', 'more',\
            'most', 'other', 'some', 'such', 'only', 'own', 'same', 'so', 'than', 'too', 'very', \
            's', 't', 'can', 'will', 'just', 'don', "don't", 'should', "should've", 'now', 'd', 'll'
, 'm', 'o', 're', \
            've', 'y', 'ain', 'aren', "aren't", 'couldn', "couldn't", 'didn', "didn't", 'doesn', "do
esn't", 'hadn',\
            "hadn't", 'hasn', "hasn't", 'haven', "haven't", 'isn', "isn't", 'ma', 'mightn',
"mightn't", 'mustn',\
            "mustn't", 'needn', "needn't", 'shan', "shan't", 'shouldn', "shouldn't", 'wasn',
"wasn't", 'weren', "weren't", \
            'won', "won't", 'wouldn', "wouldn't"])
```

In [0]:

```python
from bs4 import BeautifulSoup
from tqdm import tqdm
preprocessed_reviews = []
for sentence in tqdm(df['Text'].values):
    sentance = re.sub(r"http\S+", "", sentance)
    sentance = BeautifulSoup(sentance, 'lxml').get_text()
    sentance = decontracted(sentance)
    sentance = re.sub("\S*\d\S*", "", sentance).strip()
    sentance = re.sub('[^A-Za-z]+', ' ', sentance)
    sentance = ' '.join(e.lower() for e in sentance.split() if e.lower() not in stopwords)
    preprocessed_reviews.append(sentance.strip())
```

```
 67%|██████████████████████████████████████████        | 243452/364171
[01:37<00:52, 2278.06it/s]
```

In [0]:

```python
df['Text'] = preprocessed_reviews
```

Considering First 50k datapoints

In [22]:

```python
df_50k = data[:50000][['Text','Score']]
df_50k.head()
```

Out[22]:

	Text	Score
150523	witty little book makes son laugh loud recite ...	1
150505	grew reading sendak books watching really rosi...	1
150506	fun way children learn months year learn poems...	1
150507	great little book read aloud nice rhythm well ...	1
150508	book poetry months year goes month cute little...	1

In [0]:

```python
from sklearn.model_selection import train_test_split
y = df_50k['Score'].values
X = df_50k.drop(['Score'],axis=1)
```

```
X_train,X_test,y_train,y_test = train_test_split(X,y,test_size = 0.3,random_state = 42)
```

In [0]:

```
from keras.preprocessing import sequence
from keras.layers.embeddings import Embedding
from keras.preprocessing.text import Tokenizer
tk = Tokenizer(num_words=5000)
tk.fit_on_texts(list(X_train['Text'].values))
X_train = tk.texts_to_sequences(list(X_train['Text'].values))
X_test = tk.texts_to_sequences(list(X_test['Text'].values))
```

In [0]:

```
max_seq = 500
X_train = sequence.pad_sequences(X_train,maxlen=max_seq)
X_test = sequence.pad_sequences(X_test,maxlen = max_seq)
```

LSTM MODEL WITH 1 LAYER

In [41]:

```
from keras.layers import BatchNormalization,Activation
from keras.regularizers import L1L2
#reg = L1L2(0.01,0.01)
embed_layer = 32
model_lstm_1 = Sequential()
model_lstm_1.add(Embedding(5000,embed_layer,input_length=max_seq))
model_lstm_1.add(BatchNormalization())
model_lstm_1.add(Dropout(0.3))
model_lstm_1.add(LSTM(100))
model_lstm_1.add(Dropout(0.3))
model_lstm_1.add(Dense(1,activation='sigmoid'))
model_lstm_1.summary()
```

```
_____
Layer (type)                 Output Shape              Param #
=================================================================
embedding_3 (Embedding)      (None, 500, 32)           160000
_____
batch_normalization_3 (Batch (None, 500, 32)           128
_____
dropout_6 (Dropout)          (None, 500, 32)           0
_____
lstm_4 (LSTM)                (None, 100)               53200
_____
dropout_7 (Dropout)          (None, 100)               0
_____
dense_3 (Dense)              (None, 1)                 101
=================================================================
Total params: 213,429
Trainable params: 213,365
Non-trainable params: 64
_____
```

In [42]:

```
model_lstm_1.compile(loss = 'binary_crossentropy',optimizer = 'adam',metrics = ['accuracy'])
result = model_lstm_1.fit(X_train,y_train,epochs=10,batch_size=64,validation_split=0.2)
score = model_lstm_1.evaluate(X_test,y_test,verbose=0)
print('Test loss:', score[0])
print('Test accuracy:', score[1])
```

```
Train on 28000 samples, validate on 7000 samples
Epoch 1/10
28000/28000 [==============================] - 312s 11ms/step - loss: 0.2870 - acc: 0.8849 - val_l
oss: 0.2434 - val_acc: 0.9011
Epoch 2/10
28000/28000 [==============================] - 314s 11ms/step - loss: 0.1801 - acc: 0.9310 - val_l
oss: 0.4202 - val_acc: 0.8089
```

```
Epoch 3/10
28000/28000 [==============================] - 315s 11ms/step - loss: 0.1424 - acc: 0.9459 - val_l
oss: 0.2782 - val_acc: 0.9049
Epoch 4/10
28000/28000 [==============================] - 315s 11ms/step - loss: 0.1118 - acc: 0.9601 - val_l
oss: 0.2814 - val_acc: 0.9063
Epoch 5/10
28000/28000 [==============================] - 314s 11ms/step - loss: 0.0850 - acc: 0.9688 - val_l
oss: 0.4274 - val_acc: 0.8616
Epoch 6/10
28000/28000 [==============================] - 315s 11ms/step - loss: 0.0704 - acc: 0.9741 - val_l
oss: 0.3660 - val_acc: 0.9076
Epoch 7/10
28000/28000 [==============================] - 313s 11ms/step - loss: 0.0604 - acc: 0.9783 - val_l
oss: 0.4139 - val_acc: 0.9031
Epoch 8/10
28000/28000 [==============================] - 314s 11ms/step - loss: 0.0510 - acc: 0.9815 - val_l
oss: 0.4099 - val_acc: 0.9000
Epoch 9/10
28000/28000 [==============================] - 314s 11ms/step - loss: 0.0539 - acc: 0.9809 - val_l
oss: 0.3916 - val_acc: 0.8901
Epoch 10/10
28000/28000 [==============================] - 314s 11ms/step - loss: 0.0441 - acc: 0.9823 - val_l
oss: 0.4188 - val_acc: 0.9081
Test loss: 0.40684088416968783
Test accuracy: 0.9068666666348775
```

Validation Loss vs Training Loss

```python
val_loss = result.history['val_loss']
train_loss = result.history['loss']
x = list(np.arange(1,11))
plt.figure(figsize = (20,10))
plt.grid()
sns.lineplot(x=x,y = val_loss,color = 'blue',label = 'Validation Loss')
sns.lineplot(x=x,y=train_loss,color = 'red',label = 'Training Loss')
plt.legend()
plt.title("Validation Loss vs Training Loss")
sns.despine()
```
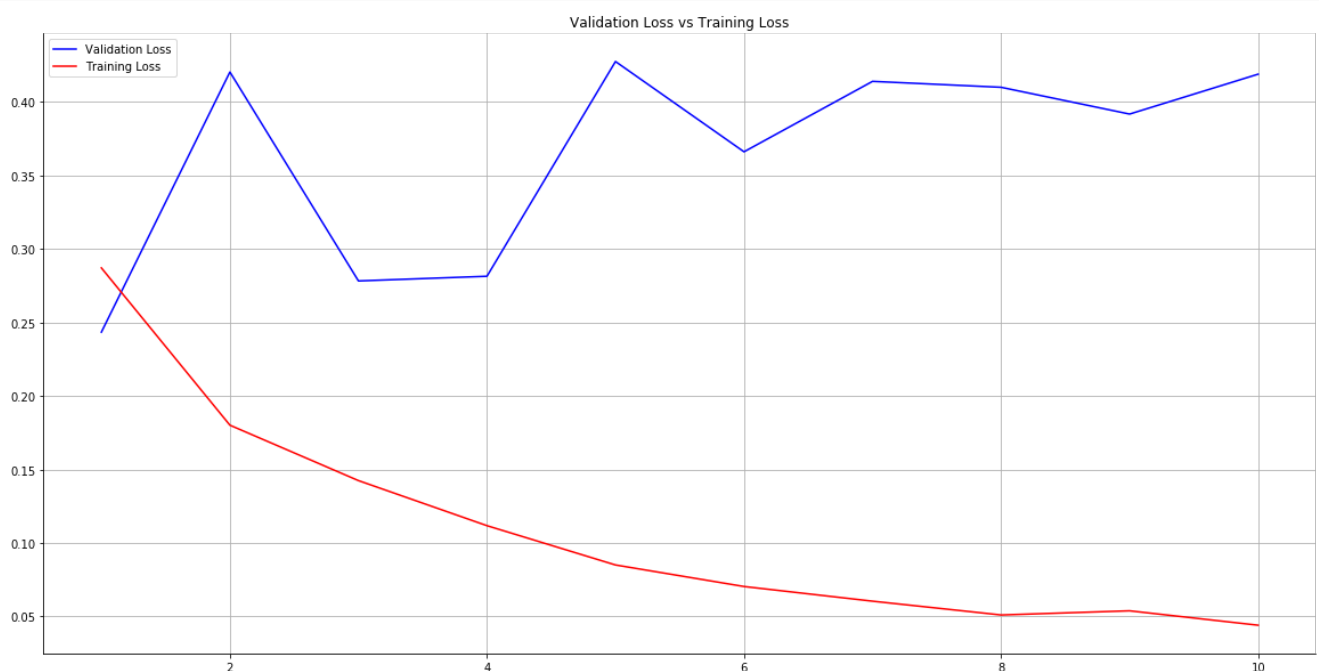

From above plot we can interpret that the model is overfitting , after using batchnormalization and dropout it's still overfitted for next model we will use regularization.

Weights Distribution Of the Layers

In [0]:

```python
embed_wgt  = model_lstm_1.get_weights()[0]
lstm_wgt = model_lstm_1.get_weights()[6]
plt.figure(figsize = (20,10))
plt.subplot(1,2,1)
sns.violinplot(y= embed_wgt,color = 'y',label = "Embedded layers weights")
plt.xlabel("Embedded Layer Weights")
plt.subplot(1,2,2)
sns.violinplot(y = lstm_wgt,color = 'blue',label = "LSTM layers weights")
plt.xlabel("LSTM Layer Weights")
plt.suptitle("Weight Distribution", fontsize = 20)
sns.despine()
```

In [0]:

```python
from keras.layers import BatchNormalization,Activation
from keras.regularizers import L1L2
reg = L1L2(0.01,0.01)
embed_layer = 32
model_lstm_1 = Sequential()
model_lstm_1.add(Embedding(5000,embed_layer,input_length=max_seq))
model_lstm_1.add(BatchNormalization())
model_lstm_1.add(Dropout(0.3))
model_lstm_1.add(LSTM(100,bias_regularizer=reg))
model_lstm_1.add(Dropout(0.3))
model_lstm_1.add(Dense(1,activation='sigmoid'))
model_lstm_1.summary()
```

```
_____
Layer (type)                 Output Shape              Param #
=================================================================
embedding_3 (Embedding)      (None, 500, 32)           160000
_____
batch_normalization_3 (Batch (None, 500, 32)           128
_____
dropout_5 (Dropout)          (None, 500, 32)           0
_____
lstm_3 (LSTM)                (None, 100)               53200
_____
dropout_6 (Dropout)          (None, 100)               0
_____
dense_3 (Dense)              (None, 1)                 101
=================================================================
Total params: 213,429
Trainable params: 213,365
Non-trainable params: 64
_____
```

In [0]:

```python
model_lstm_1.compile(loss = 'binary_crossentropy',optimizer = 'adam',metrics = ['accuracy'])
result = model_lstm_1.fit(X_train,y_train,epochs=5,batch_size=64,validation_split=0.2)
score = model_lstm_1.evaluate(X_test,y_test,verbose=0)
print('Test loss:', score[0])
print('Test accuracy:', score[1])
```

```
Train on 28000 samples, validate on 7000 samples
Epoch 1/5
12992/28000 [=============>................] - ETA: 20:47 - loss: 2.7256 - acc: 0.40 - ETA: 13:53
- loss: 2.6636 - acc: 0.60 - ETA: 11:33 - loss: 2.6119 - acc: 0.69 - ETA: 10:18 - loss: 2.5725 - a
cc: 0.73 - ETA: 9:34 - loss: 2.5366 - acc: 0.7594 - ETA: 9:09 - loss: 2.4974 - acc: 0.783 - ETA: 8
:50 - loss: 2.4800 - acc: 0.794 - ETA: 8:35 - loss: 2.4667 - acc: 0.804 - ETA: 8:20 - loss: 2.4616
- acc: 0.809 - ETA: 8:08 - loss: 2.4616 - acc: 0.812 - ETA: 7:59 - loss: 2.4464 - acc: 0.821 - ETA
: 7:49 - loss: 2.4472 - acc: 0.822 - ETA: 7:42 - loss: 2.4451 - acc: 0.824 - ETA: 7:35 - loss: 2.4
348 - acc: 0.829 - ETA: 7:29 - loss: 2.4272 - acc: 0.833 - ETA: 7:24 - loss: 2.4257 - acc: 0.834 -
ETA: 7:19 - loss: 2.4211 - acc: 0.835 - ETA: 7:16 - loss: 2.4085 - acc: 0.841 - ETA: 7:16 - loss:
2.4012 - acc: 0.843 - ETA: 7:19 - loss: 2.3990 - acc: 0.844 - ETA: 7:17 - loss: 2.3976 - acc: 0.84
4 - ETA: 7:15 - loss: 2.3938 - acc: 0.845 - ETA: 7:19 - loss: 2.3990 - acc: 0.842 - ETA: 7:17 - lo
```

ss: 2.3965 - acc: 0.843 - ETA: 7:17 - loss: 2.3924 - acc: 0.844 - ETA: 7:21 - loss: 2.3913 - acc: 0.843 - ETA: 7:18 - loss: 2.3912 - acc: 0.842 - ETA: 7:15 - loss: 2.3908 - acc: 0.841 - ETA: 7:12 - loss: 2.3930 - acc: 0.838 - ETA: 7:11 - loss: 2.3902 - acc: 0.840 - ETA: 7:12 - loss: 2.3913 - acc: 0.838 - ETA: 7:13 - loss: 2.3930 - acc: 0.835 - ETA: 7:12 - loss: 2.3927 - acc: 0.835 - ETA: 7:09 - loss: 2.3940 - acc: 0.833 - ETA: 7:07 - loss: 2.3900 - acc: 0.835 - ETA: 7:04 - loss: 2.3871 - acc: 0.836 - ETA: 7:02 - loss: 2.3870 - acc: 0.835 - ETA: 7:00 - loss: 2.3847 - acc: 0.835 - ETA: 6:57 - loss: 2.3818 - acc: 0.836 - ETA: 6:55 - loss: 2.3805 - acc: 0.835 - ETA: 6:52 - loss: 2.3766 - acc: 0.837 - ETA: 6:54 - loss: 2.3721 - acc: 0.839 - ETA: 6:52 - loss: 2.3727 - acc: 0.837 - ETA: 6:50 - loss: 2.3704 - acc: 0.838 - ETA: 6:48 - loss: 2.3693 - acc: 0.838 - ETA: 6:46 - loss: 2.3650 - acc: 0.839 - ETA: 6:44 - loss: 2.3649 - acc: 0.838 - ETA: 6:42 - loss: 2.3657 - acc: 0.837 - ETA: 6:41 - loss: 2.3639 - acc: 0.837 - ETA: 6:43 - loss: 2.3628 - acc: 0.837 - ETA: 6:43 - loss: 2.3618 - acc: 0.837 - ETA: 6:41 - loss: 2.3567 - acc: 0.839 - ETA: 6:39 - loss: 2.3547 - acc: 0.839 - ETA: 6:37 - loss: 2.3520 - acc: 0.840 - ETA: 6:36 - loss: 2.3498 - acc: 0.840 - ETA: 6:35 - loss: 2.3465 - acc: 0.841 - ETA: 6:33 - loss: 2.3439 - acc: 0.841 - ETA: 6:33 - loss: 2.3418 - acc: 0.841 - ETA: 6:33 - loss: 2.3398 - acc: 0.841 - ETA: 6:32 - loss: 2.3363 - acc: 0.843 - ETA: 6:30 - loss: 2.3329 - acc: 0.843 - ETA: 6:28 - loss: 2.3307 - acc: 0.844 - ETA: 6:27 - loss: 2.3275 - acc: 0.844 - ETA: 6:26 - loss: 2.3239 - acc: 0.845 - ETA: 6:27 - loss: 2.3227 - acc: 0.845 - ETA: 6:28 - loss: 2.3207 - acc: 0.845 - ETA: 6:27 - loss: 2.3195 - acc: 0.844 - ETA: 6:25 - loss: 2.3177 - acc: 0.845 - ETA: 6:25 - loss: 2.3163 - acc: 0.844 - ETA: 6:23 - loss: 2.3152 - acc: 0.844 - ETA: 6:22 - loss: 2.3150 - acc: 0.843 - ETA: 6:21 - loss: 2.3116 - acc: 0.844 - ETA: 6:19 - loss: 2.3084 - acc: 0.845 - ETA: 6:18 - loss: 2.3070 - acc: 0.845 - ETA: 6:17 - loss: 2.3060 - acc: 0.845 - ETA: 6:16 - loss: 2.3028 - acc: 0.846 - ETA: 6:19 - loss: 2.3003 - acc: 0.846 - ETA: 6:19 - loss: 2.2987 - acc: 0.846 - ETA: 6:20 - loss: 2.2987 - acc: 0.844 - ETA: 6:21 - loss: 2.2972 - acc: 0.844 - ETA: 6:21 - loss: 2.2952 - acc: 0.844 - ETA: 6:20 - loss: 2.2925 - acc: 0.845 - ETA: 6:19 - loss: 2.2905 - acc: 0.844 - ETA: 6:17 - loss: 2.2871 - acc: 0.845 - ETA: 6:15 - loss: 2.2862 - acc: 0.844 - ETA: 6:13 - loss: 2.2832 - acc: 0.845 - ETA: 6:12 - loss: 2.2809 - acc: 0.845 - ETA: 6:10 - loss: 2.2811 - acc: 0.844 - ETA: 6:09 - loss: 2.2785 - acc: 0.845 - ETA: 6:07 - loss: 2.2757 - acc: 0.845 - ETA: 6:06 - loss: 2.2744 - acc: 0.845 - ETA: 6:05 - loss: 2.2726 - acc: 0.844 - ETA: 6:04 - loss: 2.2707 - acc: 0.844 - ETA: 6:02 - loss: 2.2686 - acc: 0.845 - ETA: 6:01 - loss: 2.2665 - acc: 0.845 - ETA: 6:01 - loss: 2.2651 - acc: 0.844 - ETA: 5:59 - loss: 2.2623 - acc: 0.845 - ETA: 5:59 - loss: 2.2592 - acc: 0.846 - ETA: 5:58 - loss: 2.2570 - acc: 0.846 - ETA: 5:57 - loss: 2.2585 - acc: 0.845 - ETA: 5:55 - loss: 2.2571 - acc: 0.845 - ETA: 5:54 - loss: 2.2546 - acc: 0.846 - ETA: 5:52 - loss: 2.2523 - acc: 0.846 - ETA: 5:51 - loss: 2.2513 - acc: 0.845 - ETA: 5:49 - loss: 2.2488 - acc: 0.846 - ETA: 5:48 - loss: 2.2470 - acc: 0.845 - ETA: 5:47 - loss: 2.2452 - acc: 0.845 - ETA: 5:46 - loss: 2.2437 - acc: 0.845 - ETA: 5:45 - loss: 2.2419 - acc: 0.845 - ETA: 5:44 - loss: 2.2401 - acc: 0.844 - ETA: 5:43 - loss: 2.2380 - acc: 0.845 - ETA: 5:42 - loss: 2.2360 - acc: 0.844 - ETA: 5:40 - loss: 2.2340 - acc: 0.845 - ETA: 5:39 - loss: 2.2310 - acc: 0.845 - ETA: 5:41 - loss: 2.2291 - acc: 0.845 - ETA: 5:39 - loss: 2.2274 - acc: 0.845 - ETA: 5:38 - loss: 2.2250 - acc: 0.846 - ETA: 5:37 - loss: 2.2226 - acc: 0.846 - ETA: 5:36 - loss: 2.2207 - acc: 0.846 - ETA: 5:35 - loss: 2.2188 - acc: 0.846 - ETA: 5:34 - loss: 2.2161 - acc: 0.847 - ETA: 5:33 - loss: 2.2135 - acc: 0.847 - ETA: 5:32 - loss: 2.2110 - acc: 0.847 - ETA: 5:31 - loss: 2.2088 - acc: 0.848 - ETA: 5:30 - loss: 2.2069 - acc: 0.848 - ETA: 5:29 - loss: 2.2049 - acc: 0.848 - ETA: 5:28 - loss: 2.2024 - acc: 0.849 - ETA: 5:28 - loss: 2.2011 - acc: 0.848 - ETA: 5:27 - loss: 2.1998 - acc: 0.849 - ETA: 5:26 - loss: 2.1979 - acc: 0.849 - ETA: 5:26 - loss: 2.1963 - acc: 0.849 - ETA: 5:24 - loss: 2.1934 - acc: 0.849 - ETA: 5:23 - loss: 2.1913 - acc: 0.850 - ETA: 5:21 - loss: 2.1909 - acc: 0.849 - ETA: 5:20 - loss: 2.1880 - acc: 0.850 - ETA: 5:19 - loss: 2.1855 - acc: 0.850 - ETA: 5:18 - loss: 2.1831 - acc: 0.850 - ETA: 5:17 - loss: 2.1810 - acc: 0.851 - ETA: 5:15 - loss: 2.1784 - acc: 0.851 - ETA: 5:14 - loss: 2.1753 - acc: 0.852 - ETA: 5:12 - loss: 2.1742 - acc: 0.852 - ETA: 5:11 - loss: 2.1713 - acc: 0.852 - ETA: 5:10 - loss: 2.1693 - acc: 0.853 - ETA: 5:09 - loss: 2.1681 - acc: 0.853 - ETA: 5:07 - loss: 2.1663 - acc: 0.853 - ETA: 5:06 - loss: 2.1639 - acc: 0.853 - ETA: 5:05 - loss: 2.1622 - acc: 0.853 - ETA: 5:04 - loss: 2.1600 - acc: 0.853 - ETA: 5:03 - loss: 2.1580 - acc: 0.854 - ETA: 5:02 - loss: 2.1562 - acc: 0.854 - ETA: 5:01 - loss: 2.1540 - acc: 0.854 - ETA: 5:00 - loss: 2.1526 - acc: 0.854 - ETA: 4:59 - loss: 2.1503 - acc: 0.854 - ETA: 4:58 - loss: 2.1489 - acc: 0.854 - ETA: 4:57 - loss: 2.1465 - acc: 0.854 - ETA: 4:55 - loss: 2.1444 - acc: 0.855 - ETA: 4:55 - loss: 2.1433 - acc: 0.855 - ETA: 4:54 - loss: 2.1408 - acc: 0.855 - ETA: 4:53 - loss: 2.1389 - acc: 0.855 - ETA: 4:53 - loss: 2.1367 - acc: 0.856 - ETA: 4:52 - loss: 2.1350 - acc: 0.856 - ETA: 4:51 - loss: 2.1334 - acc: 0.856 - ETA: 4:50 - loss: 2.1315 - acc: 0.856 - ETA: 4:48 - loss: 2.1296 - acc: 0.856 - ETA: 4:47 - loss: 2.1276 - acc: 0.857 - ETA: 4:46 - loss: 2.1261 - acc: 0.857 - ETA: 4:45 - loss: 2.1241 - acc: 0.857 - ETA: 4:44 - loss: 2.1224 - acc: 0.857 - ETA: 4:43 - loss: 2.1210 - acc: 0.857 - ETA: 4:42 - loss: 2.1192 - acc: 0.857 - ETA: 4:41 - loss: 2.1169 - acc: 0.857 - ETA: 4:39 - loss: 2.1149 - acc: 0.857 - ETA: 4:38 - loss: 2.1128 - acc: 0.858 - ETA: 4:37 - loss: 2.1106 - acc: 0.858 - ETA: 4:36 - loss: 2.1089 - acc: 0.858 - ETA: 4:35 - loss: 2.1064 - acc: 0.858 - ETA: 4:34 - loss: 2.1048 - acc: 0.858 - ETA: 4:33 - loss: 2.1031 - acc: 0.858 - ETA: 4:31 - loss: 2.1012 - acc: 0.859 - ETA: 4:30 - loss: 2.0993 - acc: 0.859 - ETA: 4:29 - loss: 2.0976 - acc: 0.859 - ETA: 4:28 - loss: 2.0963 - acc: 0.859 - ETA: 4:27 - loss: 2.0937 - acc: 0.860 - ETA: 4:26 - loss: 2.0917 - acc: 0.860 - ETA: 4:25 - loss: 2.0897 - acc: 0.860 - ETA: 4:23 - loss: 2.0877 - acc: 0.860 - ETA: 4:22 - loss: 2.0866 - acc: 0.860 - ETA: 4:21 - loss: 2.0849 - acc: 0.861 - ETA: 4:20 - loss: 2.0831 - acc: 0.860 - ETA: 4:19 - loss: 2.0810 - acc: 0.861 - ETA: 4:18 - loss: 2.0793 - acc: 0.861 - ETA: 4:17 - loss: 2.0775 - acc: 0.861 - ETA: 4:16 - loss: 2.0753 - acc: 0.861 - ETA: 4:14 - loss: 2.0736 - acc: 0.861 - ETA: 4:13 - loss: 2.0719 - acc: 0.861 - ETA: 4:12 - loss: 2.0701 - acc: 0.861 - ETA: 4:11 - loss: 2.0682 - acc: 0.862 - ETA: 4:10 - loss: 2.0666 - acc: 0.861 - ETA: 4:09 - loss: 2.0646 - acc: 0.862 - ETA: 4:08 - loss: 2.0627 - acc: 0.862 - ETA: 4:06 - loss: 2.0609 - acc: 0.862 - ETA: 4:05 - loss: 2.0600 - acc: 0.862 - ETA: 4:04 - loss: 2.0580 - acc: 0.86226176/28000 [=============================>..] - ETA: 4:03 - loss: 2.0559 - acc: 0.863 - ETA: 4:02 - loss: 2.0543 - acc: 0.862 - ETA: 4:01 - loss: 2.0528 - acc: 0.862 - ETA: 4:00 - loss: 2.0507 - acc: 0.863 - ETA: 3:58 - loss: 2.0494 - acc: 0.863 - ETA: 3:57 - loss: 2.0475 - acc: 0.863 - ETA: 3:56 - loss: 2.0460 - acc: 0.863 - ETA: 3:55 - loss: 2.0448 - acc: 0.863 - ETA: 3:54

- loss: 2.0431 - acc: 0.863 - ETA: 3:53 - loss: 2.0419 - acc: 0.863 - ETA: 3:52 - loss: 2.0401 - acc: 0.863 - ETA: 3:51 - loss: 2.0382 - acc: 0.863 - ETA: 3:49 - loss: 2.0366 - acc: 0.863 - ETA: 3:48 - loss: 2.0345 - acc: 0.863 - ETA: 3:47 - loss: 2.0326 - acc: 0.863 - ETA: 3:46 - loss: 2.0313 - acc: 0.864 - ETA: 3:45 - loss: 2.0296 - acc: 0.864 - ETA: 3:44 - loss: 2.0277 - acc: 0.864 - ETA: 3:43 - loss: 2.0260 - acc: 0.864 - ETA: 3:41 - loss: 2.0244 - acc: 0.864 - ETA: 3:40 - loss: 2.0227 - acc: 0.864 - ETA: 3:39 - loss: 2.0210 - acc: 0.864 - ETA: 3:38 - loss: 2.0195 - acc: 0.864 - ETA: 3:37 - loss: 2.0177 - acc: 0.865 - ETA: 3:36 - loss: 2.0159 - acc: 0.865 - ETA: 3:35 - loss: 2.0138 - acc: 0.865 - ETA: 3:34 - loss: 2.0119 - acc: 0.865 - ETA: 3:33 - loss: 2.0097 - acc: 0.866 - ETA: 3:32 - loss: 2.0083 - acc: 0.866 - ETA: 3:31 - loss: 2.0065 - acc: 0.866 - ETA: 3:30 - loss: 2.0048 - acc: 0.866 - ETA: 3:29 - loss: 2.0035 - acc: 0.867 - ETA: 3:28 - loss: 2.0023 - acc: 0.867 - ETA: 3:27 - loss: 2.0006 - acc: 0.867 - ETA: 3:25 - loss: 1.9994 - acc: 0.867 - ETA: 3:24 - loss: 1.9976 - acc: 0.867 - ETA: 3:24 - loss: 1.9959 - acc: 0.867 - ETA: 3:22 - loss: 1.9942 - acc: 0.867 - ETA: 3:21 - loss: 1.9928 - acc: 0.868 - ETA: 3:20 - loss: 1.9914 - acc: 0.868 - ETA: 3:19 - loss: 1.9896 - acc: 0.868 - ETA: 3:18 - loss: 1.9881 - acc: 0.868 - ETA: 3:17 - loss: 1.9866 - acc: 0.868 - ETA: 3:16 - loss: 1.9849 - acc: 0.868 - ETA: 3:15 - loss: 1.9834 - acc: 0.868 - ETA: 3:14 - loss: 1.9818 - acc: 0.868 - ETA: 3:13 - loss: 1.9804 - acc: 0.868 - ETA: 3:11 - loss: 1.9786 - acc: 0.868 - ETA: 3:10 - loss: 1.9773 - acc: 0.868 - ETA: 3:09 - loss: 1.9764 - acc: 0.868 - ETA: 3:08 - loss: 1.9748 - acc: 0.868 - ETA: 3:07 - loss: 1.9730 - acc: 0.869 - ETA: 3:06 - loss: 1.9715 - acc: 0.869 - ETA: 3:05 - loss: 1.9699 - acc: 0.869 - ETA: 3:04 - loss: 1.9686 - acc: 0.869 - ETA: 3:03 - loss: 1.9668 - acc: 0.869 - ETA: 3:02 - loss: 1.9650 - acc: 0.870 - ETA: 3:01 - loss: 1.9633 - acc: 0.870 - ETA: 2:59 - loss: 1.9619 - acc: 0.870 - ETA: 2:58 - loss: 1.9605 - acc: 0.870 - ETA: 2:57 - loss: 1.9589 - acc: 0.870 - ETA: 2:56 - loss: 1.9576 - acc: 0.870 - ETA: 2:55 - loss: 1.9559 - acc: 0.870 - ETA: 2:54 - loss: 1.9548 - acc: 0.870 - ETA: 2:53 - loss: 1.9531 - acc: 0.870 - ETA: 2:52 - loss: 1.9517 - acc: 0.870 - ETA: 2:51 - loss: 1.9505 - acc: 0.870 - ETA: 2:50 - loss: 1.9490 - acc: 0.870 - ETA: 2:49 - loss: 1.9477 - acc: 0.870 - ETA: 2:48 - loss: 1.9463 - acc: 0.870 - ETA: 2:47 - loss: 1.9448 - acc: 0.870 - ETA: 2:45 - loss: 1.9434 - acc: 0.870 - ETA: 2:44 - loss: 1.9417 - acc: 0.871 - ETA: 2:43 - loss: 1.9401 - acc: 0.871 - ETA: 2:42 - loss: 1.9385 - acc: 0.871 - ETA: 2:41 - loss: 1.9366 - acc: 0.871 - ETA: 2:40 - loss: 1.9348 - acc: 0.871 - ETA: 2:39 - loss: 1.9337 - acc: 0.871 - ETA: 2:38 - loss: 1.9319 - acc: 0.872 - ETA: 2:37 - loss: 1.9304 - acc: 0.872 - ETA: 2:36 - loss: 1.9288 - acc: 0.872 - ETA: 2:35 - loss: 1.9273 - acc: 0.872 - ETA: 2:34 - loss: 1.9257 - acc: 0.872 - ETA: 2:33 - loss: 1.9241 - acc: 0.872 - ETA: 2:32 - loss: 1.9226 - acc: 0.873 - ETA: 2:30 - loss: 1.9210 - acc: 0.873 - ETA: 2:29 - loss: 1.9195 - acc: 0.873 - ETA: 2:28 - loss: 1.9184 - acc: 0.873 - ETA: 2:27 - loss: 1.9165 - acc: 0.873 - ETA: 2:26 - loss: 1.9153 - acc: 0.873 - ETA: 2:25 - loss: 1.9136 - acc: 0.873 - ETA: 2:24 - loss: 1.9119 - acc: 0.873 - ETA: 2:23 - loss: 1.9103 - acc: 0.874 - ETA: 2:22 - loss: 1.9094 - acc: 0.874 - ETA: 2:21 - loss: 1.9081 - acc: 0.874 - ETA: 2:20 - loss: 1.9068 - acc: 0.874 - ETA: 2:19 - loss: 1.9057 - acc: 0.874 - ETA: 2:18 - loss: 1.9043 - acc: 0.874 - ETA: 2:17 - loss: 1.9028 - acc: 0.874 - ETA: 2:16 - loss: 1.9016 - acc: 0.874 - ETA: 2:15 - loss: 1.8999 - acc: 0.874 - ETA: 2:14 - loss: 1.8991 - acc: 0.874 - ETA: 2:13 - loss: 1.8973 - acc: 0.874 - ETA: 2:12 - loss: 1.8961 - acc: 0.874 - ETA: 2:10 - loss: 1.8944 - acc: 0.874 - ETA: 2:09 - loss: 1.8933 - acc: 0.874 - ETA: 2:08 - loss: 1.8914 - acc: 0.874 - ETA: 2:07 - loss: 1.8898 - acc: 0.875 - ETA: 2:06 - loss: 1.8885 - acc: 0.875 - ETA: 2:05 - loss: 1.8872 - acc: 0.875 - ETA: 2:04 - loss: 1.8866 - acc: 0.875 - ETA: 2:03 - loss: 1.8851 - acc: 0.875 - ETA: 2:02 - loss: 1.8836 - acc: 0.875 - ETA: 2:01 - loss: 1.8824 - acc: 0.875 - ETA: 2:00 - loss: 1.8808 - acc: 0.875 - ETA: 1:59 - loss: 1.8792 - acc: 0.875 - ETA: 1:58 - loss: 1.8782 - acc: 0.875 - ETA: 1:57 - loss: 1.8768 - acc: 0.875 - ETA: 1:56 - loss: 1.8753 - acc: 0.875 - ETA: 1:55 - loss: 1.8736 - acc: 0.875 - ETA: 1:54 - loss: 1.8722 - acc: 0.875 - ETA: 1:53 - loss: 1.8707 - acc: 0.876 - ETA: 1:52 - loss: 1.8691 - acc: 0.876 - ETA: 1:51 - loss: 1.8676 - acc: 0.876 - ETA: 1:50 - loss: 1.8663 - acc: 0.876 - ETA: 1:49 - loss: 1.8653 - acc: 0.876 - ETA: 1:48 - loss: 1.8639 - acc: 0.876 - ETA: 1:47 - loss: 1.8625 - acc: 0.876 - ETA: 1:46 - loss: 1.8613 - acc: 0.876 - ETA: 1:45 - loss: 1.8599 - acc: 0.876 - ETA: 1:44 - loss: 1.8589 - acc: 0.876 - ETA: 1:43 - loss: 1.8575 - acc: 0.876 - ETA: 1:42 - loss: 1.8561 - acc: 0.876 - ETA: 1:41 - loss: 1.8548 - acc: 0.876 - ETA: 1:40 - loss: 1.8536 - acc: 0.876 - ETA: 1:39 - loss: 1.8520 - acc: 0.877 - ETA: 1:38 - loss: 1.8504 - acc: 0.877 - ETA: 1:37 - loss: 1.8487 - acc: 0.877 - ETA: 1:35 - loss: 1.8472 - acc: 0.877 - ETA: 1:34 - loss: 1.8455 - acc: 0.877 - ETA: 1:33 - loss: 1.8440 - acc: 0.877 - ETA: 1:32 - loss: 1.8426 - acc: 0.877 - ETA: 1:31 - loss: 1.8412 - acc: 0.878 - ETA: 1:30 - loss: 1.8399 - acc: 0.878 - ETA: 1:29 - loss: 1.8384 - acc: 0.878 - ETA: 1:28 - loss: 1.8373 - acc: 0.878 - ETA: 1:27 - loss: 1.8357 - acc: 0.878 - ETA: 1:26 - loss: 1.8343 - acc: 0.878 - ETA: 1:25 - loss: 1.8327 - acc: 0.878 - ETA: 1:24 - loss: 1.8316 - acc: 0.878 - ETA: 1:23 - loss: 1.8305 - acc: 0.878 - ETA: 1:22 - loss: 1.8293 - acc: 0.878 - ETA: 1:21 - loss: 1.8277 - acc: 0.878 - ETA: 1:20 - loss: 1.8266 - acc: 0.878 - ETA: 1:19 - loss: 1.8253 - acc: 0.879 - ETA: 1:18 - loss: 1.8239 - acc: 0.879 - ETA: 1:17 - loss: 1.8228 - acc: 0.878 - ETA: 1:16 - loss: 1.8214 - acc: 0.878 - ETA: 1:15 - loss: 1.8200 - acc: 0.879 - ETA: 1:14 - loss: 1.8189 - acc: 0.878 - ETA: 1:13 - loss: 1.8174 - acc: 0.879 - ETA: 1:12 - loss: 1.8164 - acc: 0.878 - ETA: 1:11 - loss: 1.8147 - acc: 0.879 - ETA: 1:10 - loss: 1.8138 - acc: 0.879 - ETA: 1:09 - loss: 1.8124 - acc: 0.879 - ETA: 1:08 - loss: 1.8109 - acc: 0.879 - ETA: 1:07 - loss: 1.8094 - acc: 0.879 - ETA: 1:06 - loss: 1.8080 - acc: 0.879 - ETA: 1:05 - loss: 1.8064 - acc: 0.879 - ETA: 1:04 - loss: 1.8052 - acc: 0.879 - ETA: 1:03 - loss: 1.8039 - acc: 0.879 - ETA: 1:02 - loss: 1.8024 - acc: 0.879 - ETA: 1:01 - loss: 1.8012 - acc: 0.879 - ETA: 1:00 - loss: 1.7995 - acc: 0.880 - ETA: 59s - loss: 1.7982 - acc: 0.880 - ETA: 58s - loss: 1.7969 - acc: 0.88 - ETA: 58s - loss: 1.7955 - acc: 0.88 - ETA: 57s - loss: 1.7939 - acc: 0.88 - ETA: 56s - loss: 1.7922 - acc: 0.88 - ETA: 55s - loss: 1.7906 - acc: 0.88 - ETA: 54s - loss: 1.7890 - acc: 0.88 - ETA: 53s - loss: 1.7877 - acc: 0.88 - ETA: 52s - loss: 1.7866 - acc: 0.88 - ETA: 51s - loss: 1.7851 - acc: 0.88 - ETA: 50s - loss: 1.7837 - acc: 0.88 - ETA: 49s - loss: 1.7825 - acc: 0.88 - ETA: 48s - loss: 1.7812 - acc: 0.88 - ETA: 47s - loss: 1.7801 - acc: 0.88 - ETA: 46s - loss: 1.7789 - acc: 0.88 - ETA: 45s - loss: 1.7774 - acc: 0.88 - ETA: 44s - loss: 1.7764 - acc: 0.88 - ETA: 43s - loss: 1.7750 - acc: 0.88 - ETA: 42s - loss: 1.7740 - acc: 0.88 - ETA: 41s - loss: 1.7728 - acc: 0.88 - ETA: 39s - loss: 1.7716 - acc: 0.88 - ETA: 38s - loss: 1.7705 - acc: 0.88 - ETA: 37s - loss: 1.7691 - acc: 0.88 - ETA: 36s - loss: 1.7679 - acc: 0.88 - ETA: 35s - loss:

```
1.7666 - acc: 0.88 - ETA: 34s - loss: 1.7655 - acc: 0.88 - ETA: 33s - loss: 1.7641 - acc: 0.88 - E
TA: 32s - loss: 1.7626 - acc: 0.88 - ETA: 31s - loss: 1.7610 - acc: 0.88 - ETA: 30s - loss: 1.7595
- acc: 0.88 - ETA: 29s - loss: 1.7580 - acc: 0.88 - ETA: 28s - loss: 1.7567 - acc:
0.883128000/28000 [==============================] - ETA: 27s - loss: 1.7555 - acc: 0.88 - ETA: 26
s - loss: 1.7540 - acc: 0.88 - ETA: 25s - loss: 1.7524 - acc: 0.88 - ETA: 24s - loss: 1.7508 - acc
: 0.88 - ETA: 23s - loss: 1.7495 - acc: 0.88 - ETA: 22s - loss: 1.7481 - acc: 0.88 - ETA: 21s - lo
ss: 1.7468 - acc: 0.88 - ETA: 20s - loss: 1.7453 - acc: 0.88 - ETA: 19s - loss: 1.7436 - acc: 0.88
- ETA: 18s - loss: 1.7421 - acc: 0.88 - ETA: 17s - loss: 1.7410 - acc: 0.88 - ETA: 16s - loss: 1.7
400 - acc: 0.88 - ETA: 15s - loss: 1.7386 - acc: 0.88 - ETA: 14s - loss: 1.7375 - acc: 0.88 - ETA:
13s - loss: 1.7363 - acc: 0.88 - ETA: 12s - loss: 1.7348 - acc: 0.88 - ETA: 11s - loss: 1.7336 - a
cc: 0.88 - ETA: 10s - loss: 1.7324 - acc: 0.88 - ETA: 9s - loss: 1.7313 - acc: 0.8846 - ETA: 8s -
loss: 1.7301 - acc: 0.884 - ETA: 7s - loss: 1.7288 - acc: 0.884 - ETA: 6s - loss: 1.7276 - acc: 0.
884 - ETA: 5s - loss: 1.7264 - acc: 0.884 - ETA: 4s - loss: 1.7254 - acc: 0.884 - ETA: 3s - loss:
1.7243 - acc: 0.884 - ETA: 2s - loss: 1.7232 - acc: 0.884 - ETA: 1s - loss: 1.7220 - acc: 0.884 -
ETA: 0s - loss: 1.7210 - acc: 0.884 - 468s 17ms/step - loss: 1.7203 - acc: 0.8848 - val_loss: 1.19
98 - val_acc: 0.8919
Epoch 2/5
13056/28000 [=============>.................] - ETA: 6:51 - loss: 1.1345 - acc: 0.921 - ETA: 6:35 -
loss: 1.1345 - acc: 0.914 - ETA: 6:47 - loss: 1.1278 - acc: 0.921 - ETA: 6:44 - loss: 1.1233 - acc
: 0.929 - ETA: 6:42 - loss: 1.1113 - acc: 0.937 - ETA: 6:38 - loss: 1.1105 - acc: 0.942 - ETA: 6:3
5 - loss: 1.1021 - acc: 0.944 - ETA: 6:37 - loss: 1.1048 - acc: 0.937 - ETA: 6:37 - loss: 1.1048 -
acc: 0.934 - ETA: 6:36 - loss: 1.1016 - acc: 0.935 - ETA: 6:33 - loss: 1.1017 - acc: 0.937 - ETA:
6:31 - loss: 1.1027 - acc: 0.936 - ETA: 6:30 - loss: 1.1019 - acc: 0.937 - ETA: 6:30 - loss: 1.102
8 - acc: 0.936 - ETA: 6:31 - loss: 1.0969 - acc: 0.937 - ETA: 6:29 - loss: 1.1112 - acc: 0.934 - E
TA: 6:28 - loss: 1.1088 - acc: 0.934 - ETA: 6:30 - loss: 1.1148 - acc: 0.932 - ETA: 6:28 - loss: 1
.1096 - acc: 0.933 - ETA: 6:28 - loss: 1.1112 - acc: 0.932 - ETA: 6:26 - loss: 1.1101 - acc: 0.930
- ETA: 6:26 - loss: 1.1098 - acc: 0.931 - ETA: 6:24 - loss: 1.1110 - acc: 0.930 - ETA: 6:25 - loss
: 1.1058 - acc: 0.931 - ETA: 6:24 - loss: 1.1030 - acc: 0.933 - ETA: 6:23 - loss: 1.1015 - acc: 0.
933 - ETA: 6:22 - loss: 1.0986 - acc: 0.933 - ETA: 6:22 - loss: 1.0979 - acc: 0.933 - ETA: 6:21 -
loss: 1.0933 - acc: 0.935 - ETA: 6:20 - loss: 1.0914 - acc: 0.935 - ETA: 6:19 - loss: 1.0900 - acc
: 0.935 - ETA: 6:18 - loss: 1.0884 - acc: 0.936 - ETA: 6:16 - loss: 1.0856 - acc: 0.937 - ETA: 6:1
5 - loss: 1.0848 - acc: 0.937 - ETA: 6:14 - loss: 1.0816 - acc: 0.937 - ETA: 6:13 - loss: 1.0840 -
acc: 0.937 - ETA: 6:12 - loss: 1.0806 - acc: 0.938 - ETA: 6:11 - loss: 1.0818 - acc: 0.937 - ETA:
6:10 - loss: 1.0831 - acc: 0.935 - ETA: 6:09 - loss: 1.0816 - acc: 0.935 - ETA: 6:08 - loss: 1.079
6 - acc: 0.936 - ETA: 6:07 - loss: 1.0770 - acc: 0.936 - ETA: 6:06 - loss: 1.0751 - acc: 0.936 - E
TA: 6:04 - loss: 1.0735 - acc: 0.936 - ETA: 6:03 - loss: 1.0735 - acc: 0.936 - ETA: 6:02 - loss: 1
.0723 - acc: 0.936 - ETA: 6:01 - loss: 1.0711 - acc: 0.935 - ETA: 6:00 - loss: 1.0708 - acc: 0.935
- ETA: 5:59 - loss: 1.0713 - acc: 0.935 - ETA: 5:58 - loss: 1.0700 - acc: 0.935 - ETA: 5:57 - loss
: 1.0706 - acc: 0.934 - ETA: 5:57 - loss: 1.0704 - acc: 0.934 - ETA: 5:55 - loss: 1.0692 - acc: 0.
934 - ETA: 5:54 - loss: 1.0689 - acc: 0.933 - ETA: 5:53 - loss: 1.0680 - acc: 0.933 - ETA: 5:53 -
loss: 1.0666 - acc: 0.933 - ETA: 5:52 - loss: 1.0657 - acc: 0.933 - ETA: 5:51 - loss: 1.0649 - acc
: 0.933 - ETA: 5:50 - loss: 1.0634 - acc: 0.933 - ETA: 5:49 - loss: 1.0648 - acc: 0.932 - ETA: 5:4
8 - loss: 1.0627 - acc: 0.932 - ETA: 5:47 - loss: 1.0625 - acc: 0.932 - ETA: 5:46 - loss: 1.0623 -
acc: 0.931 - ETA: 5:45 - loss: 1.0618 - acc: 0.930 - ETA: 5:44 - loss: 1.0600 - acc: 0.930 - ETA:
5:43 - loss: 1.0581 - acc: 0.930 - ETA: 5:42 - loss: 1.0578 - acc: 0.931 - ETA: 5:41 - loss: 1.056
3 - acc: 0.931 - ETA: 5:40 - loss: 1.0549 - acc: 0.930 - ETA: 5:39 - loss: 1.0530 - acc: 0.931 - E
TA: 5:38 - loss: 1.0519 - acc: 0.931 - ETA: 5:37 - loss: 1.0501 - acc: 0.931 - ETA: 5:36 - loss: 1
.0489 - acc: 0.932 - ETA: 5:36 - loss: 1.0493 - acc: 0.932 - ETA: 5:35 - loss: 1.0479 - acc: 0.931
- ETA: 5:34 - loss: 1.0472 - acc: 0.931 - ETA: 5:33 - loss: 1.0468 - acc: 0.932 - ETA: 5:32 - loss
: 1.0450 - acc: 0.932 - ETA: 5:31 - loss: 1.0439 - acc: 0.932 - ETA: 5:30 - loss: 1.0425 - acc: 0.
933 - ETA: 5:29 - loss: 1.0414 - acc: 0.933 - ETA: 5:28 - loss: 1.0403 - acc: 0.933 - ETA: 5:27 -
loss: 1.0415 - acc: 0.933 - ETA: 5:26 - loss: 1.0402 - acc: 0.933 - ETA: 5:25 - loss: 1.0404 - acc
: 0.932 - ETA: 5:24 - loss: 1.0388 - acc: 0.933 - ETA: 5:23 - loss: 1.0386 - acc: 0.932 - ETA: 5:2
2 - loss: 1.0375 - acc: 0.932 - ETA: 5:21 - loss: 1.0362 - acc: 0.932 - ETA: 5:21 - loss: 1.0351 -
acc: 0.933 - ETA: 5:20 - loss: 1.0337 - acc: 0.933 - ETA: 5:19 - loss: 1.0322 - acc: 0.933 - ETA:
5:18 - loss: 1.0310 - acc: 0.933 - ETA: 5:17 - loss: 1.0293 - acc: 0.933 - ETA: 5:16 - loss: 1.029
0 - acc: 0.933 - ETA: 5:15 - loss: 1.0277 - acc: 0.933 - ETA: 5:14 - loss: 1.0274 - acc: 0.933 - E
TA: 5:13 - loss: 1.0262 - acc: 0.933 - ETA: 5:12 - loss: 1.0254 - acc: 0.933 - ETA: 5:11 - loss: 1
.0235 - acc: 0.934 - ETA: 5:10 - loss: 1.0222 - acc: 0.934 - ETA: 5:09 - loss: 1.0207 - acc: 0.934
- ETA: 5:08 - loss: 1.0207 - acc: 0.934 - ETA: 5:08 - loss: 1.0199 - acc: 0.934 - ETA: 5:07 - loss
: 1.0195 - acc: 0.934 - ETA: 5:06 - loss: 1.0181 - acc: 0.934 - ETA: 5:05 - loss: 1.0168 - acc: 0.
934 - ETA: 5:04 - loss: 1.0159 - acc: 0.934 - ETA: 5:03 - loss: 1.0153 - acc: 0.934 - ETA: 5:02 -
loss: 1.0133 - acc: 0.935 - ETA: 5:01 - loss: 1.0122 - acc: 0.935 - ETA: 5:00 - loss: 1.0112 - acc
: 0.935 - ETA: 4:59 - loss: 1.0106 - acc: 0.935 - ETA: 4:59 - loss: 1.0094 - acc: 0.935 - ETA: 4:5
8 - loss: 1.0085 - acc: 0.935 - ETA: 4:57 - loss: 1.0075 - acc: 0.935 - ETA: 4:56 - loss: 1.0071 -
acc: 0.935 - ETA: 4:55 - loss: 1.0063 - acc: 0.935 - ETA: 4:54 - loss: 1.0056 - acc: 0.935 - ETA:
4:53 - loss: 1.0044 - acc: 0.935 - ETA: 4:52 - loss: 1.0037 - acc: 0.935 - ETA: 4:51 - loss: 1.002
4 - acc: 0.935 - ETA: 4:50 - loss: 1.0009 - acc: 0.935 - ETA: 4:50 - loss: 0.9999 - acc: 0.935 - E
TA: 4:49 - loss: 1.0004 - acc: 0.935 - ETA: 4:48 - loss: 0.9986 - acc: 0.935 - ETA: 4:47 - loss: 0
.9973 - acc: 0.935 - ETA: 4:46 - loss: 0.9967 - acc: 0.935 - ETA: 4:45 - loss: 0.9963 - acc: 0.935
- ETA: 4:44 - loss: 0.9946 - acc: 0.935 - ETA: 4:43 - loss: 0.9933 - acc: 0.936 - ETA: 4:43 - loss
: 0.9926 - acc: 0.935 - ETA: 4:42 - loss: 0.9919 - acc: 0.935 - ETA: 4:41 - loss: 0.9916 - acc: 0.
935 - ETA: 4:40 - loss: 0.9907 - acc: 0.935 - ETA: 4:39 - loss: 0.9898 - acc: 0.935 - ETA: 4:38 -
loss: 0.9899 - acc: 0.935 - ETA: 4:37 - loss: 0.9897 - acc: 0.934 - ETA: 4:36 - loss: 0.9892 - acc
: 0.934 - ETA: 4:35 - loss: 0.9877 - acc: 0.935 - ETA: 4:34 - loss: 0.9874 - acc: 0.935 - ETA: 4:3
3 - loss: 0.9865 - acc: 0.935 - ETA: 4:32 - loss: 0.9855 - acc: 0.935 - ETA: 4:32 - loss: 0.9846 -
acc: 0.935 - ETA: 4:31 - loss: 0.9836 - acc: 0.935 - ETA: 4:30 - loss: 0.9840 - acc: 0.935 - ETA:
```

4:29 - loss: 0.9830 - acc: 0.935 - ETA: 4:28 - loss: 0.9819 - acc: 0.935 - ETA: 4:27 - loss: 0.980
8 - acc: 0.935 - ETA: 4:26 - loss: 0.9800 - acc: 0.935 - ETA: 4:25 - loss: 0.9790 - acc: 0.935 - E
TA: 4:24 - loss: 0.9775 - acc: 0.935 - ETA: 4:23 - loss: 0.9764 - acc: 0.935 - ETA: 4:22 - loss: 0
.9765 - acc: 0.935 - ETA: 4:21 - loss: 0.9758 - acc: 0.935 - ETA: 4:20 - loss: 0.9759 - acc: 0.935
- ETA: 4:20 - loss: 0.9753 - acc: 0.934 - ETA: 4:19 - loss: 0.9737 - acc: 0.935 - ETA: 4:18 - loss
: 0.9729 - acc: 0.935 - ETA: 4:17 - loss: 0.9720 - acc: 0.935 - ETA: 4:16 - loss: 0.9710 - acc: 0.
935 - ETA: 4:15 - loss: 0.9701 - acc: 0.935 - ETA: 4:14 - loss: 0.9691 - acc: 0.935 - ETA: 4:13 -
loss: 0.9682 - acc: 0.935 - ETA: 4:12 - loss: 0.9678 - acc: 0.935 - ETA: 4:11 - loss: 0.9669 - acc
: 0.935 - ETA: 4:10 - loss: 0.9656 - acc: 0.935 - ETA: 4:09 - loss: 0.9653 - acc: 0.935 - ETA: 4:0
8 - loss: 0.9650 - acc: 0.935 - ETA: 4:08 - loss: 0.9651 - acc: 0.935 - ETA: 4:07 - loss: 0.9641 -
acc: 0.935 - ETA: 4:06 - loss: 0.9635 - acc: 0.935 - ETA: 4:05 - loss: 0.9629 - acc: 0.935 - ETA:
4:04 - loss: 0.9619 - acc: 0.935 - ETA: 4:03 - loss: 0.9610 - acc: 0.935 - ETA: 4:02 - loss: 0.960
3 - acc: 0.935 - ETA: 4:01 - loss: 0.9597 - acc: 0.934 - ETA: 4:00 - loss: 0.9584 - acc: 0.935 - E
TA: 3:59 - loss: 0.9575 - acc: 0.935 - ETA: 3:58 - loss: 0.9568 - acc: 0.935 - ETA: 3:57 - loss: 0
.9565 - acc: 0.935 - ETA: 3:56 - loss: 0.9561 - acc: 0.935 - ETA: 3:55 - loss: 0.9549 - acc: 0.935
- ETA: 3:54 - loss: 0.9542 - acc: 0.935 - ETA: 3:53 - loss: 0.9535 - acc: 0.935 - ETA: 3:53 - loss
: 0.9536 - acc: 0.935 - ETA: 3:52 - loss: 0.9529 - acc: 0.935 - ETA: 3:51 - loss: 0.9530 - acc: 0.
935 - ETA: 3:50 - loss: 0.9519 - acc: 0.935 - ETA: 3:49 - loss: 0.9513 - acc: 0.935 - ETA: 3:48 -
loss: 0.9503 - acc: 0.935 - ETA: 3:47 - loss: 0.9493 - acc: 0.935 - ETA: 3:46 - loss: 0.9483 - acc
: 0.935 - ETA: 3:45 - loss: 0.9478 - acc: 0.934 - ETA: 3:44 - loss: 0.9470 - acc: 0.934 - ETA: 3:4
3 - loss: 0.9462 - acc: 0.934 - ETA: 3:42 - loss: 0.9455 - acc: 0.934 - ETA: 3:41 - loss: 0.9443 -
acc: 0.934 - ETA: 3:40 - loss: 0.9439 - acc: 0.934 - ETA: 3:40 - loss: 0.9432 - acc: 0.934 - ETA:
3:39 - loss: 0.9424 - acc: 0.934 - ETA: 3:38 - loss: 0.9413 - acc: 0.935 - ETA: 3:37 - loss: 0.940
8 - acc: 0.935 - ETA: 3:36 - loss: 0.9398 - acc: 0.935226240/28000
[============================>..] - ETA: 3:35 - loss: 0.9391 - acc: 0.935 - ETA: 3:34 - loss: 0.938
4 - acc: 0.935 - ETA: 3:33 - loss: 0.9372 - acc: 0.935 - ETA: 3:32 - loss: 0.9362 - acc: 0.935 - E
TA: 3:31 - loss: 0.9354 - acc: 0.935 - ETA: 3:30 - loss: 0.9350 - acc: 0.935 - ETA: 3:29 - loss: 0
.9348 - acc: 0.935 - ETA: 3:28 - loss: 0.9339 - acc: 0.935 - ETA: 3:27 - loss: 0.9330 - acc: 0.934
- ETA: 3:26 - loss: 0.9322 - acc: 0.934 - ETA: 3:26 - loss: 0.9316 - acc: 0.934 - ETA: 3:25 - loss
: 0.9309 - acc: 0.934 - ETA: 3:24 - loss: 0.9301 - acc: 0.934 - ETA: 3:23 - loss: 0.9292 - acc: 0.
934 - ETA: 3:22 - loss: 0.9287 - acc: 0.934 - ETA: 3:21 - loss: 0.9276 - acc: 0.934 - ETA: 3:20 -
loss: 0.9267 - acc: 0.935 - ETA: 3:19 - loss: 0.9256 - acc: 0.935 - ETA: 3:19 - loss: 0.9253 - acc
: 0.934 - ETA: 3:18 - loss: 0.9243 - acc: 0.934 - ETA: 3:17 - loss: 0.9232 - acc: 0.935 - ETA: 3:1
6 - loss: 0.9222 - acc: 0.935 - ETA: 3:15 - loss: 0.9211 - acc: 0.935 - ETA: 3:14 - loss: 0.9206 -
acc: 0.935 - ETA: 3:13 - loss: 0.9196 - acc: 0.935 - ETA: 3:13 - loss: 0.9190 - acc: 0.935 - ETA:
3:12 - loss: 0.9182 - acc: 0.935 - ETA: 3:11 - loss: 0.9173 - acc: 0.935 - ETA: 3:10 - loss: 0.917
2 - acc: 0.935 - ETA: 3:09 - loss: 0.9164 - acc: 0.935 - ETA: 3:08 - loss: 0.9156 - acc: 0.934 - E
TA: 3:07 - loss: 0.9149 - acc: 0.934 - ETA: 3:06 - loss: 0.9138 - acc: 0.935 - ETA: 3:05 - loss: 0
.9129 - acc: 0.935 - ETA: 3:04 - loss: 0.9127 - acc: 0.935 - ETA: 3:03 - loss: 0.9119 - acc: 0.934
- ETA: 3:02 - loss: 0.9113 - acc: 0.934 - ETA: 3:02 - loss: 0.9105 - acc: 0.934 - ETA: 3:01 - loss
: 0.9094 - acc: 0.935 - ETA: 3:00 - loss: 0.9087 - acc: 0.935 - ETA: 2:59 - loss: 0.9078 - acc: 0.
935 - ETA: 2:58 - loss: 0.9068 - acc: 0.935 - ETA: 2:57 - loss: 0.9064 - acc: 0.935 - ETA: 2:56 -
loss: 0.9056 - acc: 0.935 - ETA: 2:55 - loss: 0.9044 - acc: 0.935 - ETA: 2:54 - loss: 0.9035 - acc
: 0.935 - ETA: 2:53 - loss: 0.9028 - acc: 0.935 - ETA: 2:53 - loss: 0.9019 - acc: 0.935 - ETA: 2:5
2 - loss: 0.9013 - acc: 0.935 - ETA: 2:51 - loss: 0.9008 - acc: 0.935 - ETA: 2:50 - loss: 0.8999 -
acc: 0.935 - ETA: 2:49 - loss: 0.8992 - acc: 0.935 - ETA: 2:48 - loss: 0.8988 - acc: 0.935 - ETA:
2:47 - loss: 0.8978 - acc: 0.935 - ETA: 2:46 - loss: 0.8969 - acc: 0.935 - ETA: 2:45 - loss: 0.896
3 - acc: 0.935 - ETA: 2:45 - loss: 0.8952 - acc: 0.935 - ETA: 2:44 - loss: 0.8944 - acc: 0.935 - E
TA: 2:43 - loss: 0.8938 - acc: 0.935 - ETA: 2:42 - loss: 0.8934 - acc: 0.935 - ETA: 2:41 - loss: 0
.8927 - acc: 0.935 - ETA: 2:40 - loss: 0.8919 - acc: 0.935 - ETA: 2:39 - loss: 0.8913 - acc: 0.935
- ETA: 2:38 - loss: 0.8906 - acc: 0.935 - ETA: 2:37 - loss: 0.8899 - acc: 0.935 - ETA: 2:36 - loss
: 0.8892 - acc: 0.935 - ETA: 2:35 - loss: 0.8887 - acc: 0.935 - ETA: 2:34 - loss: 0.8880 - acc: 0.
935 - ETA: 2:33 - loss: 0.8873 - acc: 0.935 - ETA: 2:32 - loss: 0.8863 - acc: 0.935 - ETA: 2:31 -
loss: 0.8855 - acc: 0.935 - ETA: 2:31 - loss: 0.8846 - acc: 0.935 - ETA: 2:30 - loss: 0.8837 - acc
: 0.935 - ETA: 2:29 - loss: 0.8837 - acc: 0.934 - ETA: 2:28 - loss: 0.8831 - acc: 0.934 - ETA: 2:2
7 - loss: 0.8824 - acc: 0.934 - ETA: 2:26 - loss: 0.8819 - acc: 0.934 - ETA: 2:25 - loss: 0.8813 -
acc: 0.934 - ETA: 2:24 - loss: 0.8808 - acc: 0.934 - ETA: 2:23 - loss: 0.8798 - acc: 0.934 - ETA:
2:22 - loss: 0.8791 - acc: 0.934 - ETA: 2:21 - loss: 0.8781 - acc: 0.934 - ETA: 2:20 - loss: 0.877
3 - acc: 0.934 - ETA: 2:19 - loss: 0.8764 - acc: 0.934 - ETA: 2:18 - loss: 0.8756 - acc: 0.934 - E
TA: 2:18 - loss: 0.8758 - acc: 0.934 - ETA: 2:17 - loss: 0.8749 - acc: 0.934 - ETA: 2:16 - loss: 0
.8741 - acc: 0.934 - ETA: 2:15 - loss: 0.8731 - acc: 0.934 - ETA: 2:14 - loss: 0.8723 - acc: 0.934
- ETA: 2:13 - loss: 0.8716 - acc: 0.934 - ETA: 2:13 - loss: 0.8706 - acc: 0.934 - ETA: 2:12 - loss
: 0.8696 - acc: 0.934 - ETA: 2:11 - loss: 0.8695 - acc: 0.934 - ETA: 2:10 - loss: 0.8688 - acc: 0.
934 - ETA: 2:09 - loss: 0.8684 - acc: 0.934 - ETA: 2:08 - loss: 0.8675 - acc: 0.934 - ETA: 2:07 -
loss: 0.8669 - acc: 0.934 - ETA: 2:06 - loss: 0.8659 - acc: 0.934 - ETA: 2:05 - loss: 0.8655 - acc
: 0.934 - ETA: 2:04 - loss: 0.8650 - acc: 0.934 - ETA: 2:03 - loss: 0.8641 - acc: 0.934 - ETA: 2:0
2 - loss: 0.8633 - acc: 0.934 - ETA: 2:01 - loss: 0.8625 - acc: 0.934 - ETA: 2:00 - loss: 0.8619 -
acc: 0.934 - ETA: 1:59 - loss: 0.8612 - acc: 0.934 - ETA: 1:58 - loss: 0.8608 - acc: 0.934 - ETA:
1:57 - loss: 0.8601 - acc: 0.934 - ETA: 1:56 - loss: 0.8593 - acc: 0.934 - ETA: 1:55 - loss: 0.858
7 - acc: 0.934 - ETA: 1:55 - loss: 0.8581 - acc: 0.934 - ETA: 1:54 - loss: 0.8571 - acc: 0.934 - E
TA: 1:53 - loss: 0.8562 - acc: 0.934 - ETA: 1:52 - loss: 0.8554 - acc: 0.934 - ETA: 1:51 - loss: 0
.8544 - acc: 0.934 - ETA: 1:50 - loss: 0.8539 - acc: 0.934 - ETA: 1:49 - loss: 0.8533 - acc: 0.934
- ETA: 1:48 - loss: 0.8526 - acc: 0.934 - ETA: 1:47 - loss: 0.8518 - acc: 0.934 - ETA: 1:46 - loss
: 0.8511 - acc: 0.934 - ETA: 1:45 - loss: 0.8503 - acc: 0.934 - ETA: 1:44 - loss: 0.8496 - acc: 0.
934 - ETA: 1:43 - loss: 0.8491 - acc: 0.934 - ETA: 1:42 - loss: 0.8481 - acc: 0.934 - ETA: 1:41 -
loss: 0.8477 - acc: 0.934 - ETA: 1:40 - loss: 0.8471 - acc: 0.934 - ETA: 1:39 - loss: 0.8464 - acc
: 0.934 - ETA: 1:38 - loss: 0.8457 - acc: 0.934 - ETA: 1:37 - loss: 0.8449 - acc: 0.934 - ETA: 1:3

7 - loss: 0.8443 - acc: 0.934 - ETA: 1:36 - loss: 0.8434 - acc: 0.934 - ETA: 1:35 - loss: 0.8425 - acc: 0.934 - ETA: 1:34 - loss: 0.8416 - acc: 0.934 - ETA: 1:33 - loss: 0.8412 - acc: 0.934 - ETA: 1:32 - loss: 0.8407 - acc: 0.934 - ETA: 1:31 - loss: 0.8398 - acc: 0.934 - ETA: 1:30 - loss: 0.838 8 - acc: 0.934 - ETA: 1:29 - loss: 0.8381 - acc: 0.934 - ETA: 1:28 - loss: 0.8372 - acc: 0.934 - E TA: 1:27 - loss: 0.8369 - acc: 0.934 - ETA: 1:26 - loss: 0.8365 - acc: 0.933 - ETA: 1:25 - loss: 0 .8361 - acc: 0.933 - ETA: 1:24 - loss: 0.8354 - acc: 0.933 - ETA: 1:23 - loss: 0.8347 - acc: 0.934 - ETA: 1:22 - loss: 0.8343 - acc: 0.933 - ETA: 1:21 - loss: 0.8334 - acc: 0.934 - ETA: 1:21 - loss : 0.8330 - acc: 0.933 - ETA: 1:20 - loss: 0.8326 - acc: 0.933 - ETA: 1:19 - loss: 0.8319 - acc: 0. 933 - ETA: 1:18 - loss: 0.8316 - acc: 0.933 - ETA: 1:17 - loss: 0.8307 - acc: 0.933 - ETA: 1:16 - loss: 0.8305 - acc: 0.933 - ETA: 1:15 - loss: 0.8296 - acc: 0.933 - ETA: 1:14 - loss: 0.8289 - acc : 0.933 - ETA: 1:13 - loss: 0.8283 - acc: 0.933 - ETA: 1:12 - loss: 0.8276 - acc: 0.933 - ETA: 1:1 1 - loss: 0.8266 - acc: 0.933 - ETA: 1:10 - loss: 0.8262 - acc: 0.933 - ETA: 1:09 - loss: 0.8256 - acc: 0.933 - ETA: 1:08 - loss: 0.8246 - acc: 0.933 - ETA: 1:07 - loss: 0.8240 - acc: 0.933 - ETA: 1:06 - loss: 0.8234 - acc: 0.933 - ETA: 1:05 - loss: 0.8230 - acc: 0.933 - ETA: 1:05 - loss: 0.822 4 - acc: 0.933 - ETA: 1:04 - loss: 0.8217 - acc: 0.933 - ETA: 1:03 - loss: 0.8218 - acc: 0.933 - E TA: 1:02 - loss: 0.8211 - acc: 0.933 - ETA: 1:01 - loss: 0.8204 - acc: 0.933 - ETA: 1:00 - loss: 0 .8196 - acc: 0.933 - ETA: 59s - loss: 0.8189 - acc: 0.933 - ETA: 58s - loss: 0.8185 - acc: 0.93 - ETA: 57s - loss: 0.8179 - acc: 0.93 - ETA: 56s - loss: 0.8172 - acc: 0.93 - ETA: 55s - loss: 0.816 5 - acc: 0.93 - ETA: 54s - loss: 0.8159 - acc: 0.93 - ETA: 54s - loss: 0.8152 - acc: 0.93 - ETA: 5 3s - loss: 0.8147 - acc: 0.93 - ETA: 52s - loss: 0.8139 - acc: 0.93 - ETA: 51s - loss: 0.8134 - ac c: 0.93 - ETA: 50s - loss: 0.8126 - acc: 0.93 - ETA: 49s - loss: 0.8118 - acc: 0.93 - ETA: 48s - l oss: 0.8113 - acc: 0.93 - ETA: 47s - loss: 0.8109 - acc: 0.93 - ETA: 46s - loss: 0.8102 - acc: 0.9 3 - ETA: 45s - loss: 0.8094 - acc: 0.93 - ETA: 44s - loss: 0.8088 - acc: 0.93 - ETA: 43s - loss: 0 .8085 - acc: 0.93 - ETA: 42s - loss: 0.8079 - acc: 0.93 - ETA: 41s - loss: 0.8070 - acc: 0.93 - ET A: 40s - loss: 0.8062 - acc: 0.93 - ETA: 39s - loss: 0.8055 - acc: 0.93 - ETA: 39s - loss: 0.8048 - acc: 0.93 - ETA: 38s - loss: 0.8040 - acc: 0.93 - ETA: 37s - loss: 0.8034 - acc: 0.93 - ETA: 36s - loss: 0.8027 - acc: 0.93 - ETA: 35s - loss: 0.8020 - acc: 0.93 - ETA: 34s - loss: 0.8013 - acc: 0.93 - ETA: 33s - loss: 0.8005 - acc: 0.93 - ETA: 32s - loss: 0.7998 - acc: 0.93 - ETA: 31s - loss : 0.7992 - acc: 0.93 - ETA: 30s - loss: 0.7987 - acc: 0.93 - ETA: 29s - loss: 0.7980 - acc: 0.93 - ETA: 28s - loss: 0.7972 - acc: 0.93 - ETA: 27s - loss: 0.7966 - acc: 0.93 - ETA: 26s - loss: 0.795 9 - acc: 0.93 - ETA: 25s - loss: 0.7951 - acc: 0.932828000/28000 [==============================] - ETA: 24s - loss: 0.7951 - acc: 0.93 - ETA: 23s - loss: 0.7945 - acc: 0.93 - ETA: 23s - loss: 0.7 937 - acc: 0.93 - ETA: 22s - loss: 0.7933 - acc: 0.93 - ETA: 21s - loss: 0.7927 - acc: 0.93 - ETA: 20s - loss: 0.7922 - acc: 0.93 - ETA: 19s - loss: 0.7917 - acc: 0.93 - ETA: 18s - loss: 0.7910 - a cc: 0.93 - ETA: 17s - loss: 0.7905 - acc: 0.93 - ETA: 16s - loss: 0.7898 - acc: 0.93 - ETA: 15s - loss: 0.7889 - acc: 0.93 - ETA: 14s - loss: 0.7883 - acc: 0.93 - ETA: 13s - loss: 0.7877 - acc: 0. 93 - ETA: 12s - loss: 0.7870 - acc: 0.93 - ETA: 11s - loss: 0.7863 - acc: 0.93 - ETA: 10s - loss: 0.7855 - acc: 0.93 - ETA: 9s - loss: 0.7851 - acc: 0.9325 - ETA: 8s - loss: 0.7843 - acc: 0.932 - ETA: 8s - loss: 0.7839 - acc: 0.932 - ETA: 7s - loss: 0.7832 - acc: 0.932 - ETA: 6s - loss: 0.7828 - acc: 0.932 - ETA: 5s - loss: 0.7824 - acc: 0.932 - ETA: 4s - loss: 0.7816 - acc: 0.932 - ETA: 3s - loss: 0.7812 - acc: 0.932 - ETA: 2s - loss: 0.7805 - acc: 0.932 - ETA: 1s - loss: 0.7800 - acc: 0.932 - ETA: 0s - loss: 0.7791 - acc: 0.932 - 438s 16ms/step - loss: 0.7787 - acc: 0.9322 - val_lo ss: 0.5400 - val_acc: 0.9096
Epoch 3/5
13056/28000 [============>.................] - ETA: 7:27 - loss: 0.4860 - acc: 0.968 - ETA: 7:03 - loss: 0.4615 - acc: 0.968 - ETA: 7:15 - loss: 0.4408 - acc: 0.974 - ETA: 7:09 - loss: 0.4384 - acc : 0.968 - ETA: 7:09 - loss: 0.4356 - acc: 0.968 - ETA: 7:03 - loss: 0.4474 - acc: 0.960 - ETA: 7:0 1 - loss: 0.4415 - acc: 0.959 - ETA: 6:59 - loss: 0.4576 - acc: 0.955 - ETA: 7:04 - loss: 0.4482 - acc: 0.958 - ETA: 7:00 - loss: 0.4425 - acc: 0.957 - ETA: 6:58 - loss: 0.4434 - acc: 0.957 - ETA: 6:55 - loss: 0.4419 - acc: 0.953 - ETA: 6:53 - loss: 0.4537 - acc: 0.948 - ETA: 6:54 - loss: 0.448 1 - acc: 0.950 - ETA: 6:52 - loss: 0.4481 - acc: 0.951 - ETA: 6:49 - loss: 0.4483 - acc: 0.952 - E TA: 6:49 - loss: 0.4420 - acc: 0.954 - ETA: 6:49 - loss: 0.4384 - acc: 0.954 - ETA: 6:47 - loss: 0 .4359 - acc: 0.954 - ETA: 6:45 - loss: 0.4392 - acc: 0.954 - ETA: 6:44 - loss: 0.4378 - acc: 0.955 - ETA: 6:43 - loss: 0.4394 - acc: 0.954 - ETA: 6:43 - loss: 0.4407 - acc: 0.953 - ETA: 6:41 - loss : 0.4419 - acc: 0.953 - ETA: 6:40 - loss: 0.4393 - acc: 0.953 - ETA: 6:38 - loss: 0.4377 - acc: 0. 953 - ETA: 6:39 - loss: 0.4342 - acc: 0.955 - ETA: 6:40 - loss: 0.4339 - acc: 0.955 - ETA: 6:39 - loss: 0.4341 - acc: 0.955 - ETA: 6:38 - loss: 0.4317 - acc: 0.957 - ETA: 6:37 - loss: 0.4293 - acc : 0.957 - ETA: 6:35 - loss: 0.4285 - acc: 0.957 - ETA: 6:34 - loss: 0.4264 - acc: 0.957 - ETA: 6:3 3 - loss: 0.4238 - acc: 0.958 - ETA: 6:32 - loss: 0.4220 - acc: 0.958 - ETA: 6:30 - loss: 0.4216 - acc: 0.957 - ETA: 6:29 - loss: 0.4207 - acc: 0.956 - ETA: 6:28 - loss: 0.4210 - acc: 0.956 - ETA: 6:26 - loss: 0.4193 - acc: 0.957 - ETA: 6:27 - loss: 0.4218 - acc: 0.955 - ETA: 6:26 - loss: 0.420 3 - acc: 0.956 - ETA: 6:25 - loss: 0.4192 - acc: 0.956 - ETA: 6:23 - loss: 0.4179 - acc: 0.957 - E TA: 6:22 - loss: 0.4182 - acc: 0.957 - ETA: 6:21 - loss: 0.4189 - acc: 0.956 - ETA: 6:19 - loss: 0 .4173 - acc: 0.957 - ETA: 6:18 - loss: 0.4193 - acc: 0.956 - ETA: 6:17 - loss: 0.4178 - acc: 0.957 - ETA: 6:16 - loss: 0.4185 - acc: 0.957 - ETA: 6:15 - loss: 0.4170 - acc: 0.958 - ETA: 6:14 - loss : 0.4176 - acc: 0.957 - ETA: 6:13 - loss: 0.4161 - acc: 0.957 - ETA: 6:13 - loss: 0.4160 - acc: 0. 957 - ETA: 6:11 - loss: 0.4143 - acc: 0.957 - ETA: 6:10 - loss: 0.4134 - acc: 0.957 - ETA: 6:09 - loss: 0.4119 - acc: 0.957 - ETA: 6:10 - loss: 0.4122 - acc: 0.956 - ETA: 6:09 - loss: 0.4115 - acc : 0.956 - ETA: 6:07 - loss: 0.4121 - acc: 0.956 - ETA: 6:07 - loss: 0.4135 - acc: 0.956 - ETA: 6:0 6 - loss: 0.4126 - acc: 0.955 - ETA: 6:04 - loss: 0.4121 - acc: 0.955 - ETA: 6:03 - loss: 0.4136 - acc: 0.955 - ETA: 6:02 - loss: 0.4125 - acc: 0.955 - ETA: 6:01 - loss: 0.4113 - acc: 0.956 - ETA: 6:00 - loss: 0.4106 - acc: 0.956 - ETA: 5:59 - loss: 0.4103 - acc: 0.955 - ETA: 5:59 - loss: 0.408 5 - acc: 0.956 - ETA: 5:58 - loss: 0.4074 - acc: 0.956 - ETA: 5:56 - loss: 0.4074 - acc: 0.956 - E TA: 5:56 - loss: 0.4070 - acc: 0.956 - ETA: 5:55 - loss: 0.4060 - acc: 0.956 - ETA: 5:54 - loss: 0 .4046 - acc: 0.956 - ETA: 5:52 - loss: 0.4050 - acc: 0.956 - ETA: 5:51 - loss: 0.4061 - acc: 0.955 - ETA: 5:50 - loss: 0.4060 - acc: 0.955 - ETA: 5:49 - loss: 0.4055 - acc: 0.955 - ETA: 5:48 - loss : 0.4047 - acc: 0.955 - ETA: 5:48 - loss: 0.4048 - acc: 0.954 - ETA: 5:47 - loss: 0.4038 - acc: 0.

```
: 0.4041 - acc: 0.955 - ETA: 5:46 - loss: 0.4040 - acc: 0.954 - ETA: 5:44 - loss: 0.4036 - acc: 0.
955 - ETA: 5:45 - loss: 0.4033 - acc: 0.955 - ETA: 5:44 - loss: 0.4034 - acc: 0.954 - ETA: 5:44 -
loss: 0.4023 - acc: 0.954 - ETA: 5:43 - loss: 0.4014 - acc: 0.955 - ETA: 5:42 - loss: 0.4008 - acc
: 0.955 - ETA: 5:40 - loss: 0.3999 - acc: 0.955 - ETA: 5:39 - loss: 0.3989 - acc: 0.955 - ETA: 5:3
8 - loss: 0.3983 - acc: 0.955 - ETA: 5:37 - loss: 0.3994 - acc: 0.954 - ETA: 5:37 - loss: 0.4007 -
acc: 0.953 - ETA: 5:36 - loss: 0.3993 - acc: 0.954 - ETA: 5:34 - loss: 0.3992 - acc: 0.954 - ETA:
5:34 - loss: 0.3983 - acc: 0.954 - ETA: 5:33 - loss: 0.3983 - acc: 0.954 - ETA: 5:32 - loss: 0.397
2 - acc: 0.954 - ETA: 5:31 - loss: 0.3962 - acc: 0.954 - ETA: 5:30 - loss: 0.3951 - acc: 0.954 - E
TA: 5:29 - loss: 0.3940 - acc: 0.955 - ETA: 5:28 - loss: 0.3931 - acc: 0.955 - ETA: 5:27 - loss: 0
.3931 - acc: 0.955 - ETA: 5:26 - loss: 0.3931 - acc: 0.955 - ETA: 5:25 - loss: 0.3931 - acc: 0.954
- ETA: 5:24 - loss: 0.3919 - acc: 0.954 - ETA: 5:23 - loss: 0.3911 - acc: 0.955 - ETA: 5:22 - loss
: 0.3904 - acc: 0.955 - ETA: 5:21 - loss: 0.3903 - acc: 0.954 - ETA: 5:20 - loss: 0.3892 - acc: 0.
955 - ETA: 5:19 - loss: 0.3891 - acc: 0.954 - ETA: 5:18 - loss: 0.3900 - acc: 0.954 - ETA: 5:18 -
loss: 0.3907 - acc: 0.953 - ETA: 5:17 - loss: 0.3905 - acc: 0.953 - ETA: 5:16 - loss: 0.3904 - acc
: 0.953 - ETA: 5:15 - loss: 0.3903 - acc: 0.953 - ETA: 5:14 - loss: 0.3907 - acc: 0.953 - ETA: 5:1
3 - loss: 0.3898 - acc: 0.953 - ETA: 5:12 - loss: 0.3887 - acc: 0.953 - ETA: 5:11 - loss: 0.3886 -
acc: 0.953 - ETA: 5:10 - loss: 0.3892 - acc: 0.953 - ETA: 5:09 - loss: 0.3891 - acc: 0.953 - ETA:
5:08 - loss: 0.3887 - acc: 0.953 - ETA: 5:07 - loss: 0.3878 - acc: 0.953 - ETA: 5:06 - loss: 0.387
4 - acc: 0.953 - ETA: 5:05 - loss: 0.3874 - acc: 0.953 - ETA: 5:04 - loss: 0.3874 - acc: 0.953 - E
TA: 5:03 - loss: 0.3867 - acc: 0.953 - ETA: 5:02 - loss: 0.3866 - acc: 0.953 - ETA: 5:01 - loss: 0
.3872 - acc: 0.952 - ETA: 5:00 - loss: 0.3867 - acc: 0.952 - ETA: 4:59 - loss: 0.3860 - acc: 0.952
- ETA: 4:59 - loss: 0.3859 - acc: 0.952 - ETA: 4:58 - loss: 0.3854 - acc: 0.952 - ETA: 4:57 - loss
: 0.3847 - acc: 0.952 - ETA: 4:56 - loss: 0.3843 - acc: 0.952 - ETA: 4:55 - loss: 0.3838 - acc: 0.
952 - ETA: 4:54 - loss: 0.3828 - acc: 0.952 - ETA: 4:53 - loss: 0.3818 - acc: 0.952 - ETA: 4:52 -
loss: 0.3810 - acc: 0.952 - ETA: 4:51 - loss: 0.3800 - acc: 0.953 - ETA: 4:50 - loss: 0.3794 - acc
: 0.953 - ETA: 4:49 - loss: 0.3786 - acc: 0.953 - ETA: 4:48 - loss: 0.3781 - acc: 0.953 - ETA: 4:4
7 - loss: 0.3776 - acc: 0.953 - ETA: 4:46 - loss: 0.3769 - acc: 0.953 - ETA: 4:45 - loss: 0.3761 -
acc: 0.953 - ETA: 4:44 - loss: 0.3757 - acc: 0.953 - ETA: 4:43 - loss: 0.3753 - acc: 0.953 - ETA:
4:42 - loss: 0.3757 - acc: 0.952 - ETA: 4:41 - loss: 0.3760 - acc: 0.952 - ETA: 4:40 - loss: 0.376
8 - acc: 0.952 - ETA: 4:39 - loss: 0.3761 - acc: 0.952 - ETA: 4:39 - loss: 0.3754 - acc: 0.952 - E
TA: 4:38 - loss: 0.3745 - acc: 0.952 - ETA: 4:37 - loss: 0.3738 - acc: 0.952 - ETA: 4:36 - loss: 0
.3734 - acc: 0.952 - ETA: 4:35 - loss: 0.3725 - acc: 0.952 - ETA: 4:34 - loss: 0.3721 - acc: 0.952
- ETA: 4:33 - loss: 0.3719 - acc: 0.952 - ETA: 4:32 - loss: 0.3716 - acc: 0.952 - ETA: 4:31 - loss
: 0.3714 - acc: 0.952 - ETA: 4:30 - loss: 0.3712 - acc: 0.952 - ETA: 4:29 - loss: 0.3710 - acc: 0.
952 - ETA: 4:28 - loss: 0.3703 - acc: 0.952 - ETA: 4:27 - loss: 0.3698 - acc: 0.952 - ETA: 4:26 -
loss: 0.3694 - acc: 0.952 - ETA: 4:25 - loss: 0.3692 - acc: 0.951 - ETA: 4:24 - loss: 0.3688 - acc
: 0.951 - ETA: 4:23 - loss: 0.3685 - acc: 0.951 - ETA: 4:22 - loss: 0.3679 - acc: 0.951 - ETA: 4:2
1 - loss: 0.3674 - acc: 0.951 - ETA: 4:20 - loss: 0.3665 - acc: 0.951 - ETA: 4:19 - loss: 0.3661 -
acc: 0.951 - ETA: 4:18 - loss: 0.3651 - acc: 0.952 - ETA: 4:17 - loss: 0.3646 - acc: 0.952 - ETA:
4:16 - loss: 0.3637 - acc: 0.952 - ETA: 4:15 - loss: 0.3637 - acc: 0.952 - ETA: 4:14 - loss: 0.362
8 - acc: 0.952 - ETA: 4:13 - loss: 0.3624 - acc: 0.952 - ETA: 4:12 - loss: 0.3617 - acc: 0.952 - E
TA: 4:11 - loss: 0.3619 - acc: 0.952 - ETA: 4:10 - loss: 0.3610 - acc: 0.952 - ETA: 4:09 - loss: 0
.3612 - acc: 0.952 - ETA: 4:08 - loss: 0.3610 - acc: 0.952 - ETA: 4:08 - loss: 0.3602 - acc: 0.952
- ETA: 4:07 - loss: 0.3597 - acc: 0.952 - ETA: 4:06 - loss: 0.3594 - acc: 0.952 - ETA: 4:05 - loss
: 0.3594 - acc: 0.952 - ETA: 4:04 - loss: 0.3586 - acc: 0.952 - ETA: 4:03 - loss: 0.3582 - acc: 0.
952 - ETA: 4:03 - loss: 0.3577 - acc: 0.952 - ETA: 4:02 - loss: 0.3571 - acc: 0.952 - ETA: 4:02 -
loss: 0.3564 - acc: 0.952 - ETA: 4:01 - loss: 0.3561 - acc: 0.952 - ETA: 4:00 - loss: 0.3555 - acc
: 0.952 - ETA: 3:59 - loss: 0.3547 - acc: 0.952 - ETA: 3:58 - loss: 0.3540 - acc: 0.952 - ETA: 3:5
7 - loss: 0.3534 - acc: 0.952 - ETA: 3:57 - loss: 0.3529 - acc: 0.952 - ETA: 3:56 - loss: 0.3523 -
acc: 0.952 - ETA: 3:55 - loss: 0.3517 - acc: 0.952 - ETA: 3:54 - loss: 0.3513 - acc: 0.952 - ETA:
3:53 - loss: 0.3504 - acc: 0.952 - ETA: 3:52 - loss: 0.3498 - acc: 0.952 - ETA: 3:51 - loss: 0.349
8 - acc: 0.952 - ETA: 3:50 - loss: 0.3492 - acc: 0.952926240/28000
[=============================>..] - ETA: 3:49 - loss: 0.3484 - acc: 0.953 - ETA: 3:48 - loss: 0.348
1 - acc: 0.952 - ETA: 3:47 - loss: 0.3475 - acc: 0.953 - ETA: 3:46 - loss: 0.3475 - acc: 0.952 - E
TA: 3:45 - loss: 0.3473 - acc: 0.952 - ETA: 3:44 - loss: 0.3468 - acc: 0.952 - ETA: 3:43 - loss: 0
.3467 - acc: 0.952 - ETA: 3:42 - loss: 0.3464 - acc: 0.952 - ETA: 3:41 - loss: 0.3463 - acc: 0.952
- ETA: 3:40 - loss: 0.3459 - acc: 0.952 - ETA: 3:39 - loss: 0.3452 - acc: 0.952 - ETA: 3:38 - loss
: 0.3448 - acc: 0.952 - ETA: 3:37 - loss: 0.3443 - acc: 0.952 - ETA: 3:36 - loss: 0.3443 - acc: 0.
952 - ETA: 3:35 - loss: 0.3440 - acc: 0.952 - ETA: 3:34 - loss: 0.3437 - acc: 0.952 - ETA: 3:33 -
loss: 0.3432 - acc: 0.952 - ETA: 3:32 - loss: 0.3428 - acc: 0.952 - ETA: 3:31 - loss: 0.3422 - acc
: 0.952 - ETA: 3:30 - loss: 0.3417 - acc: 0.952 - ETA: 3:29 - loss: 0.3411 - acc: 0.952 - ETA: 3:2
8 - loss: 0.3407 - acc: 0.952 - ETA: 3:27 - loss: 0.3403 - acc: 0.952 - ETA: 3:26 - loss: 0.3396 -
acc: 0.952 - ETA: 3:25 - loss: 0.3397 - acc: 0.952 - ETA: 3:25 - loss: 0.3396 - acc: 0.951 - ETA:
3:23 - loss: 0.3396 - acc: 0.951 - ETA: 3:22 - loss: 0.3390 - acc: 0.951 - ETA: 3:22 - loss: 0.338
9 - acc: 0.951 - ETA: 3:21 - loss: 0.3382 - acc: 0.951 - ETA: 3:20 - loss: 0.3379 - acc: 0.951 - E
TA: 3:19 - loss: 0.3374 - acc: 0.951 - ETA: 3:17 - loss: 0.3368 - acc: 0.951 - ETA: 3:17 - loss: 0
.3365 - acc: 0.951 - ETA: 3:16 - loss: 0.3361 - acc: 0.951 - ETA: 3:15 - loss: 0.3354 - acc: 0.951
- ETA: 3:14 - loss: 0.3352 - acc: 0.951 - ETA: 3:13 - loss: 0.3346 - acc: 0.951 - ETA: 3:12 - loss
: 0.3343 - acc: 0.951 - ETA: 3:11 - loss: 0.3344 - acc: 0.951 - ETA: 3:10 - loss: 0.3340 - acc: 0.
951 - ETA: 3:09 - loss: 0.3338 - acc: 0.951 - ETA: 3:08 - loss: 0.3334 - acc: 0.951 - ETA: 3:07 -
loss: 0.3331 - acc: 0.951 - ETA: 3:06 - loss: 0.3325 - acc: 0.951 - ETA: 3:05 - loss: 0.3322 - acc
: 0.951 - ETA: 3:04 - loss: 0.3318 - acc: 0.951 - ETA: 3:03 - loss: 0.3314 - acc: 0.951 - ETA: 3:0
2 - loss: 0.3308 - acc: 0.951 - ETA: 3:01 - loss: 0.3304 - acc: 0.951 - ETA: 3:00 - loss: 0.3301 -
acc: 0.951 - ETA: 2:59 - loss: 0.3294 - acc: 0.951 - ETA: 2:58 - loss: 0.3292 - acc: 0.951 - ETA:
2:57 - loss: 0.3287 - acc: 0.951 - ETA: 2:56 - loss: 0.3281 - acc: 0.951 - ETA: 2:55 - loss: 0.327
5 - acc: 0.951 - ETA: 2:54 - loss: 0.3267 - acc: 0.951 - ETA: 2:53 - loss: 0.3264 - acc: 0.951 - E
TA: 2:52 - loss: 0.3259 - acc: 0.951 - ETA: 2:51 - loss: 0.3259 - acc: 0.951 - ETA: 2:50 - loss: 0
.3251 - acc: 0.951 - ETA: 2:49 - loss: 0.3245 - acc: 0.952 - ETA: 2:48 - loss: 0.3247 - acc: 0.951
```

```
.3251 - acc: 0.951 - ETA: 2:49 - loss: 0.3245 - acc: 0.952 - ETA: 2:48 - loss: 0.3247 - acc: 0.951
- ETA: 2:47 - loss: 0.3246 - acc: 0.951 - ETA: 2:46 - loss: 0.3238 - acc: 0.951 - ETA: 2:45 - loss
: 0.3234 - acc: 0.951 - ETA: 2:44 - loss: 0.3230 - acc: 0.951 - ETA: 2:43 - loss: 0.3225 - acc: 0.
951 - ETA: 2:42 - loss: 0.3218 - acc: 0.952 - ETA: 2:41 - loss: 0.3211 - acc: 0.952 - ETA: 2:40 -
loss: 0.3215 - acc: 0.951 - ETA: 2:39 - loss: 0.3213 - acc: 0.951 - ETA: 2:38 - loss: 0.3214 - acc
: 0.951 - ETA: 2:37 - loss: 0.3211 - acc: 0.951 - ETA: 2:36 - loss: 0.3208 - acc: 0.951 - ETA: 2:3
5 - loss: 0.3201 - acc: 0.951 - ETA: 2:34 - loss: 0.3195 - acc: 0.951 - ETA: 2:33 - loss: 0.3190 -
acc: 0.951 - ETA: 2:32 - loss: 0.3185 - acc: 0.951 - ETA: 2:31 - loss: 0.3181 - acc: 0.951 - ETA:
2:30 - loss: 0.3177 - acc: 0.951 - ETA: 2:29 - loss: 0.3173 - acc: 0.951 - ETA: 2:28 - loss: 0.316
8 - acc: 0.951 - ETA: 2:27 - loss: 0.3167 - acc: 0.951 - ETA: 2:26 - loss: 0.3163 - acc: 0.951 - E
TA: 2:25 - loss: 0.3159 - acc: 0.951 - ETA: 2:24 - loss: 0.3154 - acc: 0.951 - ETA: 2:23 - loss: 0
.3148 - acc: 0.951 - ETA: 2:22 - loss: 0.3144 - acc: 0.951 - ETA: 2:21 - loss: 0.3141 - acc: 0.951
- ETA: 2:20 - loss: 0.3138 - acc: 0.951 - ETA: 2:19 - loss: 0.3138 - acc: 0.951 - ETA: 2:18 - loss
: 0.3141 - acc: 0.950 - ETA: 2:17 - loss: 0.3140 - acc: 0.950 - ETA: 2:16 - loss: 0.3136 - acc: 0.
950 - ETA: 2:15 - loss: 0.3134 - acc: 0.950 - ETA: 2:14 - loss: 0.3133 - acc: 0.950 - ETA: 2:13 -
loss: 0.3129 - acc: 0.950 - ETA: 2:13 - loss: 0.3124 - acc: 0.950 - ETA: 2:11 - loss: 0.3123 - acc
: 0.950 - ETA: 2:10 - loss: 0.3121 - acc: 0.950 - ETA: 2:10 - loss: 0.3120 - acc: 0.950 - ETA: 2:0
9 - loss: 0.3115 - acc: 0.950 - ETA: 2:08 - loss: 0.3110 - acc: 0.950 - ETA: 2:07 - loss: 0.3108 -
acc: 0.950 - ETA: 2:06 - loss: 0.3107 - acc: 0.950 - ETA: 2:05 - loss: 0.3104 - acc: 0.950 - ETA:
2:04 - loss: 0.3101 - acc: 0.950 - ETA: 2:03 - loss: 0.3096 - acc: 0.950 - ETA: 2:02 - loss: 0.309
6 - acc: 0.949 - ETA: 2:01 - loss: 0.3095 - acc: 0.949 - ETA: 2:00 - loss: 0.3090 - acc: 0.949 - E
TA: 1:59 - loss: 0.3090 - acc: 0.949 - ETA: 1:58 - loss: 0.3087 - acc: 0.949 - ETA: 1:57 - loss: 0
.3082 - acc: 0.949 - ETA: 1:56 - loss: 0.3077 - acc: 0.949 - ETA: 1:55 - loss: 0.3075 - acc: 0.949
- ETA: 1:54 - loss: 0.3073 - acc: 0.949 - ETA: 1:53 - loss: 0.3072 - acc: 0.949 - ETA: 1:52 - loss
: 0.3067 - acc: 0.949 - ETA: 1:51 - loss: 0.3063 - acc: 0.949 - ETA: 1:50 - loss: 0.3059 - acc: 0.
949 - ETA: 1:49 - loss: 0.3056 - acc: 0.949 - ETA: 1:48 - loss: 0.3053 - acc: 0.949 - ETA: 1:47 -
loss: 0.3049 - acc: 0.949 - ETA: 1:46 - loss: 0.3045 - acc: 0.949 - ETA: 1:45 - loss: 0.3042 - acc
: 0.949 - ETA: 1:44 - loss: 0.3039 - acc: 0.949 - ETA: 1:43 - loss: 0.3039 - acc: 0.949 - ETA: 1:4
2 - loss: 0.3038 - acc: 0.949 - ETA: 1:41 - loss: 0.3033 - acc: 0.949 - ETA: 1:40 - loss: 0.3030 -
acc: 0.949 - ETA: 1:39 - loss: 0.3028 - acc: 0.949 - ETA: 1:38 - loss: 0.3025 - acc: 0.949 - ETA:
1:37 - loss: 0.3022 - acc: 0.948 - ETA: 1:36 - loss: 0.3018 - acc: 0.948 - ETA: 1:35 - loss: 0.301
6 - acc: 0.948 - ETA: 1:34 - loss: 0.3014 - acc: 0.948 - ETA: 1:33 - loss: 0.3007 - acc: 0.948 - E
TA: 1:32 - loss: 0.3008 - acc: 0.948 - ETA: 1:31 - loss: 0.3012 - acc: 0.948 - ETA: 1:30 - loss: 0
.3009 - acc: 0.948 - ETA: 1:29 - loss: 0.3004 - acc: 0.948 - ETA: 1:28 - loss: 0.3004 - acc: 0.948
- ETA: 1:27 - loss: 0.3002 - acc: 0.948 - ETA: 1:26 - loss: 0.3002 - acc: 0.948 - ETA: 1:25 - loss
: 0.3002 - acc: 0.948 - ETA: 1:24 - loss: 0.3001 - acc: 0.947 - ETA: 1:23 - loss: 0.2998 - acc: 0.
947 - ETA: 1:22 - loss: 0.2998 - acc: 0.947 - ETA: 1:21 - loss: 0.2997 - acc: 0.947 - ETA: 1:20 -
loss: 0.2995 - acc: 0.947 - ETA: 1:19 - loss: 0.2991 - acc: 0.947 - ETA: 1:18 - loss: 0.2988 - acc
: 0.947 - ETA: 1:17 - loss: 0.2986 - acc: 0.947 - ETA: 1:16 - loss: 0.2985 - acc: 0.947 - ETA: 1:1
5 - loss: 0.2982 - acc: 0.947 - ETA: 1:14 - loss: 0.2979 - acc: 0.947 - ETA: 1:13 - loss: 0.2975 -
acc: 0.947 - ETA: 1:12 - loss: 0.2974 - acc: 0.947 - ETA: 1:11 - loss: 0.2973 - acc: 0.947 - ETA:
1:10 - loss: 0.2970 - acc: 0.947 - ETA: 1:09 - loss: 0.2966 - acc: 0.947 - ETA: 1:08 - loss: 0.296
6 - acc: 0.947 - ETA: 1:07 - loss: 0.2962 - acc: 0.947 - ETA: 1:06 - loss: 0.2960 - acc: 0.947 - E
TA: 1:05 - loss: 0.2957 - acc: 0.947 - ETA: 1:04 - loss: 0.2955 - acc: 0.946 - ETA: 1:03 - loss: 0
.2952 - acc: 0.946 - ETA: 1:02 - loss: 0.2950 - acc: 0.946 - ETA: 1:01 - loss: 0.2947 - acc: 0.946
- ETA: 1:00 - loss: 0.2945 - acc: 0.946 - ETA: 1:00 - loss: 0.2941 - acc: 0.946 - ETA: 59s - loss:
0.2937 - acc: 0.946 - ETA: 58s - loss: 0.2933 - acc: 0.94 - ETA: 57s - loss: 0.2929 - acc: 0.94 -
ETA: 56s - loss: 0.2925 - acc: 0.94 - ETA: 55s - loss: 0.2923 - acc: 0.94 - ETA: 54s - loss: 0.291
7 - acc: 0.94 - ETA: 53s - loss: 0.2913 - acc: 0.94 - ETA: 52s - loss: 0.2910 - acc: 0.94 - ETA: 5
1s - loss: 0.2907 - acc: 0.94 - ETA: 50s - loss: 0.2903 - acc: 0.94 - ETA: 49s - loss: 0.2897 - ac
c: 0.94 - ETA: 48s - loss: 0.2894 - acc: 0.94 - ETA: 47s - loss: 0.2890 - acc: 0.94 - ETA: 46s - l
oss: 0.2886 - acc: 0.94 - ETA: 45s - loss: 0.2881 - acc: 0.94 - ETA: 44s - loss: 0.2882 - acc: 0.9
4 - ETA: 43s - loss: 0.2877 - acc: 0.94 - ETA: 42s - loss: 0.2875 - acc: 0.94 - ETA: 41s - loss: 0
.2874 - acc: 0.94 - ETA: 40s - loss: 0.2872 - acc: 0.94 - ETA: 39s - loss: 0.2869 - acc: 0.94 - ET
A: 38s - loss: 0.2864 - acc: 0.94 - ETA: 37s - loss: 0.2859 - acc: 0.94 - ETA: 36s - loss: 0.2855
- acc: 0.94 - ETA: 35s - loss: 0.2851 - acc: 0.94 - ETA: 34s - loss: 0.2847 - acc: 0.94 - ETA: 33s
- loss: 0.2846 - acc: 0.94 - ETA: 32s - loss: 0.2843 - acc: 0.94 - ETA: 31s - loss: 0.2842 - acc:
0.94 - ETA: 30s - loss: 0.2839 - acc: 0.94 - ETA: 29s - loss: 0.2835 - acc: 0.94 - ETA: 28s - loss
: 0.2831 - acc: 0.94 - ETA: 27s - loss: 0.2828 - acc: 0.946428000/28000
[==============================] - ETA: 26s - loss: 0.2825 - acc: 0.94 - ETA: 25s - loss: 0.2821 -
acc: 0.94 - ETA: 24s - loss: 0.2817 - acc: 0.94 - ETA: 23s - loss: 0.2812 - acc: 0.94 - ETA: 22s -
loss: 0.2810 - acc: 0.94 - ETA: 21s - loss: 0.2809 - acc: 0.94 - ETA: 20s - loss: 0.2804 - acc: 0.
94 - ETA: 19s - loss: 0.2801 - acc: 0.94 - ETA: 18s - loss: 0.2796 - acc: 0.94 - ETA: 17s - loss:
0.2794 - acc: 0.94 - ETA: 16s - loss: 0.2789 - acc: 0.94 - ETA: 15s - loss: 0.2785 - acc: 0.94 - E
TA: 14s - loss: 0.2780 - acc: 0.94 - ETA: 13s - loss: 0.2779 - acc: 0.94 - ETA: 12s - loss: 0.2777
- acc: 0.94 - ETA: 11s - loss: 0.2772 - acc: 0.94 - ETA: 10s - loss: 0.2772 - acc: 0.94 - ETA: 9s
- loss: 0.2770 - acc: 0.9464 - ETA: 8s - loss: 0.2765 - acc: 0.946 - ETA: 7s - loss: 0.2761 - acc:
0.946 - ETA: 6s - loss: 0.2757 - acc: 0.946 - ETA: 5s - loss: 0.2755 - acc: 0.946 - ETA: 4s - loss
: 0.2753 - acc: 0.946 - ETA: 3s - loss: 0.2750 - acc: 0.946 - ETA: 2s - loss: 0.2748 - acc: 0.946
- ETA: 1s - loss: 0.2748 - acc: 0.946 - ETA: 0s - loss: 0.2746 - acc: 0.946 - 461s 16ms/step - los
s: 0.2743 - acc: 0.9463 - val_loss: 0.2598 - val_acc: 0.9063
Epoch 4/5
13056/28000 [============>.................] - ETA: 7:39 - loss: 0.1097 - acc: 0.968 - ETA: 7:45 -
loss: 0.1023 - acc: 0.960 - ETA: 7:34 - loss: 0.1032 - acc: 0.963 - ETA: 7:26 - loss: 0.1045 - acc
: 0.960 - ETA: 7:25 - loss: 0.1176 - acc: 0.962 - ETA: 7:20 - loss: 0.1121 - acc: 0.963 - ETA: 7:1
6 - loss: 0.1118 - acc: 0.966 - ETA: 7:21 - loss: 0.1143 - acc: 0.966 - ETA: 7:20 - loss: 0.1091 -
acc: 0.968 - ETA: 7:17 - loss: 0.1073 - acc: 0.968 - ETA: 7:14 - loss: 0.1067 - acc: 0.967 - ETA:
7:12 - loss: 0.1051 - acc: 0.968 - ETA: 7:10 - loss: 0.1061 - acc: 0.966 - ETA: 7:10 - loss: 0.103
```

7:12 - loss: 0.1051 - acc: 0.966 - ETA: 7:10 - loss: 0.1001 - acc: 0.966 - ETA: 7:10 - loss: 0.105
8 - acc: 0.966 - ETA: 7:08 - loss: 0.1014 - acc: 0.966 - ETA: 7:06 - loss: 0.0997 - acc: 0.966 - E
TA: 7:04 - loss: 0.1028 - acc: 0.966 - ETA: 7:02 - loss: 0.1015 - acc: 0.967 - ETA: 7:02 - loss: 0
.1040 - acc: 0.965 - ETA: 7:01 - loss: 0.1013 - acc: 0.966 - ETA: 6:59 - loss: 0.1069 - acc: 0.965
- ETA: 6:58 - loss: 0.1078 - acc: 0.965 - ETA: 6:56 - loss: 0.1045 - acc: 0.966 - ETA: 6:56 - loss
: 0.1064 - acc: 0.966 - ETA: 6:56 - loss: 0.1053 - acc: 0.967 - ETA: 6:54 - loss: 0.1059 - acc: 0.
966 - ETA: 6:52 - loss: 0.1043 - acc: 0.965 - ETA: 6:51 - loss: 0.1043 - acc: 0.966 - ETA: 6:51 -
loss: 0.1040 - acc: 0.965 - ETA: 6:51 - loss: 0.1032 - acc: 0.966 - ETA: 6:49 - loss: 0.1038 - acc
: 0.965 - ETA: 6:48 - loss: 0.1066 - acc: 0.964 - ETA: 6:46 - loss: 0.1056 - acc: 0.964 - ETA: 6:4
5 - loss: 0.1063 - acc: 0.963 - ETA: 6:44 - loss: 0.1070 - acc: 0.963 - ETA: 6:42 - loss: 0.1055 -
acc: 0.964 - ETA: 6:41 - loss: 0.1079 - acc: 0.962 - ETA: 6:40 - loss: 0.1065 - acc: 0.963 - ETA:
6:38 - loss: 0.1043 - acc: 0.964 - ETA: 6:37 - loss: 0.1044 - acc: 0.964 - ETA: 6:36 - loss: 0.105
8 - acc: 0.964 - ETA: 6:34 - loss: 0.1046 - acc: 0.964 - ETA: 6:33 - loss: 0.1051 - acc: 0.964 - E
TA: 6:33 - loss: 0.1037 - acc: 0.965 - ETA: 6:31 - loss: 0.1041 - acc: 0.964 - ETA: 6:31 - loss: 0
.1037 - acc: 0.964 - ETA: 6:30 - loss: 0.1025 - acc: 0.965 - ETA: 6:30 - loss: 0.1017 - acc: 0.965
- ETA: 6:28 - loss: 0.1032 - acc: 0.965 - ETA: 6:28 - loss: 0.1041 - acc: 0.965 - ETA: 6:27 - loss
: 0.1033 - acc: 0.965 - ETA: 6:25 - loss: 0.1024 - acc: 0.965 - ETA: 6:24 - loss: 0.1020 - acc: 0.
965 - ETA: 6:23 - loss: 0.1036 - acc: 0.964 - ETA: 6:22 - loss: 0.1028 - acc: 0.964 - ETA: 6:21 -
loss: 0.1023 - acc: 0.965 - ETA: 6:20 - loss: 0.1032 - acc: 0.964 - ETA: 6:19 - loss: 0.1030 - acc
: 0.964 - ETA: 6:21 - loss: 0.1021 - acc: 0.965 - ETA: 6:20 - loss: 0.1030 - acc: 0.964 - ETA: 6:1
8 - loss: 0.1033 - acc: 0.964 - ETA: 6:17 - loss: 0.1032 - acc: 0.965 - ETA: 6:16 - loss: 0.1035 -
acc: 0.964 - ETA: 6:14 - loss: 0.1027 - acc: 0.964 - ETA: 6:13 - loss: 0.1029 - acc: 0.964 - ETA:
6:12 - loss: 0.1023 - acc: 0.965 - ETA: 6:11 - loss: 0.1010 - acc: 0.965 - ETA: 6:10 - loss: 0.100
3 - acc: 0.965 - ETA: 6:09 - loss: 0.0992 - acc: 0.966 - ETA: 6:08 - loss: 0.0994 - acc: 0.965 - E
TA: 6:07 - loss: 0.0997 - acc: 0.966 - ETA: 6:06 - loss: 0.0996 - acc: 0.966 - ETA: 6:05 - loss: 0
.0988 - acc: 0.966 - ETA: 6:04 - loss: 0.0982 - acc: 0.966 - ETA: 6:03 - loss: 0.0985 - acc: 0.966
- ETA: 6:02 - loss: 0.0978 - acc: 0.966 - ETA: 6:01 - loss: 0.0973 - acc: 0.966 - ETA: 5:59 - loss
: 0.0980 - acc: 0.965 - ETA: 5:59 - loss: 0.0982 - acc: 0.965 - ETA: 5:58 - loss: 0.0983 - acc: 0.
965 - ETA: 5:57 - loss: 0.0982 - acc: 0.965 - ETA: 5:56 - loss: 0.0981 - acc: 0.966 - ETA: 5:55 -
loss: 0.0990 - acc: 0.965 - ETA: 5:54 - loss: 0.0984 - acc: 0.966 - ETA: 5:53 - loss: 0.0983 - acc
: 0.966 - ETA: 5:52 - loss: 0.0978 - acc: 0.966 - ETA: 5:51 - loss: 0.0976 - acc: 0.966 - ETA: 5:5
0 - loss: 0.0978 - acc: 0.966 - ETA: 5:49 - loss: 0.0979 - acc: 0.966 - ETA: 5:48 - loss: 0.0986 -
acc: 0.966 - ETA: 5:47 - loss: 0.0983 - acc: 0.965 - ETA: 5:46 - loss: 0.0985 - acc: 0.965 - ETA:
5:45 - loss: 0.0985 - acc: 0.965 - ETA: 5:44 - loss: 0.0980 - acc: 0.966 - ETA: 5:43 - loss: 0.098
9 - acc: 0.966 - ETA: 5:42 - loss: 0.0991 - acc: 0.966 - ETA: 5:42 - loss: 0.0988 - acc: 0.966 - E
TA: 5:41 - loss: 0.0989 - acc: 0.965 - ETA: 5:40 - loss: 0.0995 - acc: 0.965 - ETA: 5:39 - loss: 0
.0999 - acc: 0.965 - ETA: 5:38 - loss: 0.0997 - acc: 0.965 - ETA: 5:37 - loss: 0.0992 - acc: 0.966
- ETA: 5:36 - loss: 0.0987 - acc: 0.966 - ETA: 5:35 - loss: 0.0986 - acc: 0.966 - ETA: 5:34 - loss
: 0.0984 - acc: 0.966 - ETA: 5:33 - loss: 0.0995 - acc: 0.965 - ETA: 5:32 - loss: 0.0994 - acc: 0.
966 - ETA: 5:31 - loss: 0.0988 - acc: 0.966 - ETA: 5:30 - loss: 0.0989 - acc: 0.966 - ETA: 5:29 -
loss: 0.0984 - acc: 0.966 - ETA: 5:28 - loss: 0.0991 - acc: 0.965 - ETA: 5:27 - loss: 0.0986 - acc
: 0.966 - ETA: 5:27 - loss: 0.0993 - acc: 0.965 - ETA: 5:26 - loss: 0.1009 - acc: 0.965 - ETA: 5:2
4 - loss: 0.1005 - acc: 0.965 - ETA: 5:23 - loss: 0.1001 - acc: 0.965 - ETA: 5:22 - loss: 0.1002 -
acc: 0.965 - ETA: 5:21 - loss: 0.1003 - acc: 0.965 - ETA: 5:20 - loss: 0.1004 - acc: 0.965 - ETA:
5:19 - loss: 0.0999 - acc: 0.965 - ETA: 5:18 - loss: 0.0996 - acc: 0.965 - ETA: 5:18 - loss: 0.099
1 - acc: 0.965 - ETA: 5:17 - loss: 0.0994 - acc: 0.966 - ETA: 5:15 - loss: 0.0991 - acc: 0.966 - E
TA: 5:14 - loss: 0.0987 - acc: 0.966 - ETA: 5:13 - loss: 0.0984 - acc: 0.966 - ETA: 5:12 - loss: 0
.0980 - acc: 0.966 - ETA: 5:11 - loss: 0.0981 - acc: 0.966 - ETA: 5:10 - loss: 0.0984 - acc: 0.966
- ETA: 5:10 - loss: 0.0985 - acc: 0.966 - ETA: 5:09 - loss: 0.0989 - acc: 0.966 - ETA: 5:08 - loss
: 0.0983 - acc: 0.966 - ETA: 5:08 - loss: 0.0985 - acc: 0.965 - ETA: 5:06 - loss: 0.0981 - acc: 0.
966 - ETA: 5:05 - loss: 0.0975 - acc: 0.966 - ETA: 5:04 - loss: 0.0980 - acc: 0.965 - ETA: 5:03 -
loss: 0.0986 - acc: 0.965 - ETA: 5:02 - loss: 0.1002 - acc: 0.965 - ETA: 5:01 - loss: 0.1005 - acc
: 0.965 - ETA: 5:00 - loss: 0.1006 - acc: 0.965 - ETA: 4:59 - loss: 0.1008 - acc: 0.965 - ETA: 4:5
8 - loss: 0.1011 - acc: 0.965 - ETA: 4:57 - loss: 0.1011 - acc: 0.965 - ETA: 4:56 - loss: 0.1016 -
acc: 0.965 - ETA: 4:55 - loss: 0.1010 - acc: 0.965 - ETA: 4:54 - loss: 0.1008 - acc: 0.965 - ETA:
4:53 - loss: 0.1008 - acc: 0.965 - ETA: 4:52 - loss: 0.1006 - acc: 0.965 - ETA: 4:51 - loss: 0.101
1 - acc: 0.965 - ETA: 4:50 - loss: 0.1007 - acc: 0.965 - ETA: 4:49 - loss: 0.1006 - acc: 0.965 - E
TA: 4:48 - loss: 0.1006 - acc: 0.965 - ETA: 4:47 - loss: 0.1007 - acc: 0.964 - ETA: 4:46 - loss: 0
.1005 - acc: 0.965 - ETA: 4:45 - loss: 0.1015 - acc: 0.964 - ETA: 4:44 - loss: 0.1016 - acc: 0.964
- ETA: 4:43 - loss: 0.1023 - acc: 0.964 - ETA: 4:42 - loss: 0.1023 - acc: 0.964 - ETA: 4:41 - loss
: 0.1022 - acc: 0.964 - ETA: 4:40 - loss: 0.1022 - acc: 0.964 - ETA: 4:39 - loss: 0.1027 - acc: 0.
964 - ETA: 4:38 - loss: 0.1026 - acc: 0.964 - ETA: 4:37 - loss: 0.1024 - acc: 0.964 - ETA: 4:36 -
loss: 0.1028 - acc: 0.964 - ETA: 4:35 - loss: 0.1026 - acc: 0.964 - ETA: 4:34 - loss: 0.1026 - acc
: 0.964 - ETA: 4:33 - loss: 0.1030 - acc: 0.964 - ETA: 4:32 - loss: 0.1029 - acc: 0.964 - ETA: 4:3
1 - loss: 0.1033 - acc: 0.963 - ETA: 4:30 - loss: 0.1039 - acc: 0.963 - ETA: 4:29 - loss: 0.1036 -
acc: 0.963 - ETA: 4:28 - loss: 0.1031 - acc: 0.964 - ETA: 4:27 - loss: 0.1037 - acc: 0.963 - ETA:
4:26 - loss: 0.1039 - acc: 0.963 - ETA: 4:25 - loss: 0.1041 - acc: 0.963 - ETA: 4:24 - loss: 0.103
8 - acc: 0.963 - ETA: 4:23 - loss: 0.1036 - acc: 0.964 - ETA: 4:22 - loss: 0.1035 - acc: 0.963 - E
TA: 4:21 - loss: 0.1037 - acc: 0.963 - ETA: 4:20 - loss: 0.1035 - acc: 0.963 - ETA: 4:19 - loss: 0
.1033 - acc: 0.963 - ETA: 4:18 - loss: 0.1030 - acc: 0.963 - ETA: 4:17 - loss: 0.1031 - acc: 0.963
- ETA: 4:16 - loss: 0.1031 - acc: 0.963 - ETA: 4:15 - loss: 0.1032 - acc: 0.963 - ETA: 4:14 - loss
: 0.1037 - acc: 0.963 - ETA: 4:13 - loss: 0.1039 - acc: 0.963 - ETA: 4:12 - loss: 0.1042 - acc: 0.
963 - ETA: 4:11 - loss: 0.1042 - acc: 0.963 - ETA: 4:10 - loss: 0.1043 - acc: 0.963 - ETA: 4:09 -
loss: 0.1050 - acc: 0.963 - ETA: 4:07 - loss: 0.1048 - acc: 0.963 - ETA: 4:06 - loss: 0.1054 - acc
: 0.962 - ETA: 4:05 - loss: 0.1055 - acc: 0.962 - ETA: 4:04 - loss: 0.1054 - acc: 0.963 - ETA: 4:0
3 - loss: 0.1053 - acc: 0.963 - ETA: 4:02 - loss: 0.1054 - acc: 0.963 - ETA: 4:01 - loss: 0.1052 -
acc: 0.963 - ETA: 4:00 - loss: 0.1050 - acc: 0.963 - ETA: 3:59 - loss: 0.1052 - acc: 0.963 - ETA:
3:58 - loss: 0.1050 - acc: 0.963 - ETA: 3:57 - loss: 0.1050 - acc: 0.963 - ETA: 3:56 - loss: 0.105

3:58 - loss: 0.1050 - acc: 0.963 - ETA: 3:57 - loss: 0.1050 - acc: 0.963 - ETA: 3:56 - loss: 0.105
5 - acc: 0.963 - ETA: 3:55 - loss: 0.1056 - acc: 0.963126240/28000
[============================>..] - ETA: 3:54 - loss: 0.1052 - acc: 0.963 - ETA: 3:53 - loss: 0.105
0 - acc: 0.963 - ETA: 3:52 - loss: 0.1053 - acc: 0.963 - ETA: 3:51 - loss: 0.1053 - acc: 0.963 - E
TA: 3:50 - loss: 0.1052 - acc: 0.963 - ETA: 3:49 - loss: 0.1048 - acc: 0.963 - ETA: 3:48 - loss: 0
.1046 - acc: 0.963 - ETA: 3:47 - loss: 0.1045 - acc: 0.963 - ETA: 3:46 - loss: 0.1046 - acc: 0.963
- ETA: 3:45 - loss: 0.1044 - acc: 0.963 - ETA: 3:44 - loss: 0.1044 - acc: 0.963 - ETA: 3:43 - loss
: 0.1044 - acc: 0.963 - ETA: 3:42 - loss: 0.1046 - acc: 0.963 - ETA: 3:41 - loss: 0.1044 - acc: 0.
963 - ETA: 3:40 - loss: 0.1046 - acc: 0.963 - ETA: 3:39 - loss: 0.1048 - acc: 0.963 - ETA: 3:38 -
loss: 0.1046 - acc: 0.963 - ETA: 3:37 - loss: 0.1050 - acc: 0.962 - ETA: 3:36 - loss: 0.1049 - acc
: 0.962 - ETA: 3:35 - loss: 0.1051 - acc: 0.962 - ETA: 3:34 - loss: 0.1052 - acc: 0.962 - ETA: 3:3
3 - loss: 0.1050 - acc: 0.962 - ETA: 3:32 - loss: 0.1052 - acc: 0.962 - ETA: 3:31 - loss: 0.1051 -
acc: 0.962 - ETA: 3:30 - loss: 0.1057 - acc: 0.962 - ETA: 3:29 - loss: 0.1057 - acc: 0.962 - ETA:
3:28 - loss: 0.1056 - acc: 0.962 - ETA: 3:27 - loss: 0.1057 - acc: 0.962 - ETA: 3:26 - loss: 0.105
7 - acc: 0.962 - ETA: 3:25 - loss: 0.1060 - acc: 0.962 - ETA: 3:24 - loss: 0.1057 - acc: 0.962 - E
TA: 3:23 - loss: 0.1057 - acc: 0.962 - ETA: 3:22 - loss: 0.1054 - acc: 0.962 - ETA: 3:21 - loss: 0
.1052 - acc: 0.962 - ETA: 3:20 - loss: 0.1053 - acc: 0.962 - ETA: 3:19 - loss: 0.1051 - acc: 0.962
- ETA: 3:18 - loss: 0.1051 - acc: 0.962 - ETA: 3:17 - loss: 0.1051 - acc: 0.962 - ETA: 3:16 - loss
: 0.1053 - acc: 0.962 - ETA: 3:15 - loss: 0.1051 - acc: 0.962 - ETA: 3:14 - loss: 0.1054 - acc: 0.
962 - ETA: 3:13 - loss: 0.1055 - acc: 0.962 - ETA: 3:12 - loss: 0.1055 - acc: 0.962 - ETA: 3:11 -
loss: 0.1054 - acc: 0.962 - ETA: 3:10 - loss: 0.1054 - acc: 0.962 - ETA: 3:09 - loss: 0.1057 - acc
: 0.962 - ETA: 3:08 - loss: 0.1056 - acc: 0.962 - ETA: 3:07 - loss: 0.1054 - acc: 0.962 - ETA: 3:0
6 - loss: 0.1056 - acc: 0.961 - ETA: 3:05 - loss: 0.1057 - acc: 0.961 - ETA: 3:04 - loss: 0.1057 -
acc: 0.961 - ETA: 3:03 - loss: 0.1058 - acc: 0.961 - ETA: 3:02 - loss: 0.1059 - acc: 0.961 - ETA:
3:01 - loss: 0.1060 - acc: 0.961 - ETA: 3:00 - loss: 0.1057 - acc: 0.961 - ETA: 2:59 - loss: 0.105
8 - acc: 0.961 - ETA: 2:58 - loss: 0.1058 - acc: 0.961 - ETA: 2:57 - loss: 0.1058 - acc: 0.961 - E
TA: 2:56 - loss: 0.1057 - acc: 0.961 - ETA: 2:55 - loss: 0.1056 - acc: 0.961 - ETA: 2:54 - loss: 0
.1055 - acc: 0.962 - ETA: 2:53 - loss: 0.1057 - acc: 0.961 - ETA: 2:52 - loss: 0.1058 - acc: 0.961
- ETA: 2:51 - loss: 0.1057 - acc: 0.961 - ETA: 2:50 - loss: 0.1059 - acc: 0.961 - ETA: 2:49 - loss
: 0.1059 - acc: 0.961 - ETA: 2:48 - loss: 0.1057 - acc: 0.961 - ETA: 2:47 - loss: 0.1057 - acc: 0.
961 - ETA: 2:46 - loss: 0.1056 - acc: 0.961 - ETA: 2:45 - loss: 0.1055 - acc: 0.962 - ETA: 2:44 -
loss: 0.1056 - acc: 0.962 - ETA: 2:43 - loss: 0.1055 - acc: 0.962 - ETA: 2:42 - loss: 0.1055 - acc
: 0.962 - ETA: 2:41 - loss: 0.1059 - acc: 0.961 - ETA: 2:40 - loss: 0.1058 - acc: 0.961 - ETA: 2:3
9 - loss: 0.1060 - acc: 0.961 - ETA: 2:38 - loss: 0.1060 - acc: 0.961 - ETA: 2:37 - loss: 0.1062 -
acc: 0.961 - ETA: 2:36 - loss: 0.1064 - acc: 0.961 - ETA: 2:35 - loss: 0.1061 - acc: 0.961 - ETA:
2:34 - loss: 0.1060 - acc: 0.961 - ETA: 2:33 - loss: 0.1058 - acc: 0.961 - ETA: 2:32 - loss: 0.106
1 - acc: 0.961 - ETA: 2:31 - loss: 0.1059 - acc: 0.961 - ETA: 2:30 - loss: 0.1060 - acc: 0.961 - E
TA: 2:29 - loss: 0.1064 - acc: 0.961 - ETA: 2:28 - loss: 0.1062 - acc: 0.961 - ETA: 2:27 - loss: 0
.1061 - acc: 0.961 - ETA: 2:26 - loss: 0.1060 - acc: 0.961 - ETA: 2:25 - loss: 0.1058 - acc: 0.961
- ETA: 2:24 - loss: 0.1057 - acc: 0.961 - ETA: 2:23 - loss: 0.1058 - acc: 0.961 - ETA: 2:22 - loss
: 0.1065 - acc: 0.961 - ETA: 2:21 - loss: 0.1064 - acc: 0.961 - ETA: 2:20 - loss: 0.1067 - acc: 0.
961 - ETA: 2:19 - loss: 0.1067 - acc: 0.961 - ETA: 2:18 - loss: 0.1070 - acc: 0.961 - ETA: 2:17 -
loss: 0.1070 - acc: 0.961 - ETA: 2:16 - loss: 0.1069 - acc: 0.961 - ETA: 2:15 - loss: 0.1067 - acc
: 0.961 - ETA: 2:14 - loss: 0.1065 - acc: 0.961 - ETA: 2:13 - loss: 0.1066 - acc: 0.961 - ETA: 2:1
2 - loss: 0.1065 - acc: 0.961 - ETA: 2:11 - loss: 0.1063 - acc: 0.961 - ETA: 2:10 - loss: 0.1062 -
acc: 0.961 - ETA: 2:09 - loss: 0.1062 - acc: 0.961 - ETA: 2:08 - loss: 0.1061 - acc: 0.961 - ETA:
2:07 - loss: 0.1059 - acc: 0.961 - ETA: 2:06 - loss: 0.1058 - acc: 0.961 - ETA: 2:05 - loss: 0.105
8 - acc: 0.961 - ETA: 2:04 - loss: 0.1063 - acc: 0.961 - ETA: 2:03 - loss: 0.1061 - acc: 0.961 - E
TA: 2:02 - loss: 0.1063 - acc: 0.961 - ETA: 2:01 - loss: 0.1063 - acc: 0.961 - ETA: 2:00 - loss: 0
.1062 - acc: 0.961 - ETA: 1:59 - loss: 0.1063 - acc: 0.961 - ETA: 1:58 - loss: 0.1064 - acc: 0.961
- ETA: 1:57 - loss: 0.1063 - acc: 0.961 - ETA: 1:56 - loss: 0.1063 - acc: 0.961 - ETA: 1:55 - loss
: 0.1062 - acc: 0.961 - ETA: 1:54 - loss: 0.1062 - acc: 0.961 - ETA: 1:53 - loss: 0.1064 - acc: 0.
961 - ETA: 1:52 - loss: 0.1065 - acc: 0.961 - ETA: 1:51 - loss: 0.1069 - acc: 0.961 - ETA: 1:50 -
loss: 0.1072 - acc: 0.961 - ETA: 1:48 - loss: 0.1075 - acc: 0.961 - ETA: 1:47 - loss: 0.1074 - acc
: 0.961 - ETA: 1:47 - loss: 0.1079 - acc: 0.961 - ETA: 1:46 - loss: 0.1079 - acc: 0.961 - ETA: 1:4
5 - loss: 0.1080 - acc: 0.961 - ETA: 1:44 - loss: 0.1078 - acc: 0.961 - ETA: 1:43 - loss: 0.1082 -
acc: 0.961 - ETA: 1:42 - loss: 0.1081 - acc: 0.961 - ETA: 1:41 - loss: 0.1080 - acc: 0.961 - ETA:
1:40 - loss: 0.1080 - acc: 0.961 - ETA: 1:38 - loss: 0.1080 - acc: 0.961 - ETA: 1:37 - loss: 0.107
9 - acc: 0.961 - ETA: 1:36 - loss: 0.1079 - acc: 0.961 - ETA: 1:35 - loss: 0.1077 - acc: 0.961 - E
TA: 1:34 - loss: 0.1077 - acc: 0.961 - ETA: 1:33 - loss: 0.1077 - acc: 0.961 - ETA: 1:32 - loss: 0
.1075 - acc: 0.961 - ETA: 1:31 - loss: 0.1078 - acc: 0.961 - ETA: 1:30 - loss: 0.1081 - acc: 0.961
- ETA: 1:29 - loss: 0.1081 - acc: 0.961 - ETA: 1:28 - loss: 0.1084 - acc: 0.960 - ETA: 1:27 - loss
: 0.1084 - acc: 0.961 - ETA: 1:26 - loss: 0.1083 - acc: 0.961 - ETA: 1:25 - loss: 0.1083 - acc: 0.
961 - ETA: 1:24 - loss: 0.1085 - acc: 0.960 - ETA: 1:23 - loss: 0.1084 - acc: 0.960 - ETA: 1:22 -
loss: 0.1087 - acc: 0.960 - ETA: 1:21 - loss: 0.1087 - acc: 0.960 - ETA: 1:20 - loss: 0.1090 - acc
: 0.960 - ETA: 1:19 - loss: 0.1092 - acc: 0.960 - ETA: 1:18 - loss: 0.1093 - acc: 0.960 - ETA: 1:1
7 - loss: 0.1093 - acc: 0.960 - ETA: 1:16 - loss: 0.1091 - acc: 0.960 - ETA: 1:15 - loss: 0.1091 -
acc: 0.960 - ETA: 1:14 - loss: 0.1091 - acc: 0.960 - ETA: 1:13 - loss: 0.1091 - acc: 0.960 - ETA:
1:12 - loss: 0.1090 - acc: 0.960 - ETA: 1:11 - loss: 0.1091 - acc: 0.960 - ETA: 1:10 - loss: 0.108
9 - acc: 0.960 - ETA: 1:09 - loss: 0.1089 - acc: 0.960 - ETA: 1:08 - loss: 0.1088 - acc: 0.960 - E
TA: 1:07 - loss: 0.1087 - acc: 0.960 - ETA: 1:06 - loss: 0.1085 - acc: 0.960 - ETA: 1:05 - loss: 0
.1085 - acc: 0.960 - ETA: 1:04 - loss: 0.1087 - acc: 0.960 - ETA: 1:03 - loss: 0.1088 - acc: 0.960
- ETA: 1:02 - loss: 0.1087 - acc: 0.960 - ETA: 1:01 - loss: 0.1088 - acc: 0.960 - ETA: 1:00 - loss
: 0.1088 - acc: 0.960 - ETA: 59s - loss: 0.1089 - acc: 0.960 - ETA: 58s - loss: 0.1089 - acc: 0.96
- ETA: 57s - loss: 0.1089 - acc: 0.96 - ETA: 56s - loss: 0.1088 - acc: 0.96 - ETA: 55s - loss: 0.1
089 - acc: 0.96 - ETA: 54s - loss: 0.1092 - acc: 0.96 - ETA: 53s - loss: 0.1092 - acc: 0.96 - ETA:
52s - loss: 0.1092 - acc: 0.96 - ETA: 51s - loss: 0.1091 - acc: 0.96 - ETA: 50s - loss: 0.1090 - a
cc: 0.96 - ETA: 49s - loss: 0.1092 - acc: 0.96 - ETA: 48s - loss: 0.1090 - acc: 0.96 - ETA: 47s

cc: 0.96 - ETA: 49s - loss: 0.1092 - acc: 0.96 - ETA: 48s - loss: 0.1090 - acc: 0.96 - ETA: 47s - loss: 0.1092 - acc: 0.96 - ETA: 46s - loss: 0.1097 - acc: 0.96 - ETA: 45s - loss: 0.1097 - acc: 0. 96 - ETA: 44s - loss: 0.1096 - acc: 0.96 - ETA: 43s - loss: 0.1098 - acc: 0.96 - ETA: 42s - loss: 0.1099 - acc: 0.96 - ETA: 41s - loss: 0.1098 - acc: 0.96 - ETA: 40s - loss: 0.1097 - acc: 0.96 - E TA: 39s - loss: 0.1099 - acc: 0.96 - ETA: 38s - loss: 0.1099 - acc: 0.96 - ETA: 37s - loss: 0.1099 - acc: 0.96 - ETA: 36s - loss: 0.1098 - acc: 0.96 - ETA: 35s - loss: 0.1099 - acc: 0.96 - ETA: 34s - loss: 0.1102 - acc: 0.96 - ETA: 33s - loss: 0.1105 - acc: 0.95 - ETA: 32s - loss: 0.1103 - acc: 0.96 - ETA: 31s - loss: 0.1103 - acc: 0.96 - ETA: 30s - loss: 0.1101 - acc: 0.96 - ETA: 29s - loss : 0.1102 - acc: 0.96 - ETA: 27s - loss: 0.1102 - acc: 0.960028000/28000
[==============================] - ETA: 26s - loss: 0.1102 - acc: 0.96 - ETA: 25s - loss: 0.1103 - acc: 0.96 - ETA: 24s - loss: 0.1101 - acc: 0.96 - ETA: 23s - loss: 0.1102 - acc: 0.96 - ETA: 22s - loss: 0.1103 - acc: 0.96 - ETA: 21s - loss: 0.1102 - acc: 0.96 - ETA: 20s - loss: 0.1101 - acc: 0. 96 - ETA: 19s - loss: 0.1104 - acc: 0.96 - ETA: 18s - loss: 0.1104 - acc: 0.96 - ETA: 17s - loss: 0.1101 - acc: 0.96 - ETA: 16s - loss: 0.1100 - acc: 0.96 - ETA: 15s - loss: 0.1102 - acc: 0.96 - E TA: 14s - loss: 0.1103 - acc: 0.96 - ETA: 13s - loss: 0.1102 - acc: 0.96 - ETA: 12s - loss: 0.1103 - acc: 0.96 - ETA: 11s - loss: 0.1103 - acc: 0.96 - ETA: 10s - loss: 0.1104 - acc: 0.96 - ETA: 9s - loss: 0.1104 - acc: 0.9600 - ETA: 8s - loss: 0.1107 - acc: 0.959 - ETA: 7s - loss: 0.1106 - acc: 0.959 - ETA: 6s - loss: 0.1104 - acc: 0.959 - ETA: 5s - loss: 0.1103 - acc: 0.960 - ETA: 4s - loss : 0.1102 - acc: 0.960 - ETA: 3s - loss: 0.1101 - acc: 0.960 - ETA: 2s - loss: 0.1102 - acc: 0.960 - ETA: 1s - loss: 0.1103 - acc: 0.959 - ETA: 0s - loss: 0.1101 - acc: 0.960 - 472s 17ms/step - los s: 0.1102 - acc: 0.9600 - val_loss: 0.2784 - val_acc: 0.9037
Epoch 5/5
13056/28000 [=============>................] - ETA: 8:02 - loss: 0.0598 - acc: 1.000 - ETA: 7:57 - loss: 0.1086 - acc: 0.976 - ETA: 7:48 - loss: 0.0997 - acc: 0.974 - ETA: 7:45 - loss: 0.0840 - acc : 0.980 - ETA: 7:36 - loss: 0.0832 - acc: 0.975 - ETA: 7:37 - loss: 0.1058 - acc: 0.966 - ETA: 7:3 9 - loss: 0.0961 - acc: 0.968 - ETA: 7:35 - loss: 0.0878 - acc: 0.972 - ETA: 7:31 - loss: 0.0835 - acc: 0.974 - ETA: 7:29 - loss: 0.0836 - acc: 0.975 - ETA: 7:48 - loss: 0.0791 - acc: 0.977 - ETA: 7:42 - loss: 0.0820 - acc: 0.974 - ETA: 7:39 - loss: 0.0803 - acc: 0.974 - ETA: 7:35 - loss: 0.077 9 - acc: 0.976 - ETA: 7:33 - loss: 0.0830 - acc: 0.975 - ETA: 7:31 - loss: 0.0804 - acc: 0.975 - E TA: 7:28 - loss: 0.0780 - acc: 0.976 - ETA: 7:27 - loss: 0.0775 - acc: 0.975 - ETA: 7:31 - loss: 0 .0804 - acc: 0.973 - ETA: 7:28 - loss: 0.0776 - acc: 0.975 - ETA: 7:27 - loss: 0.0766 - acc: 0.975 - ETA: 7:25 - loss: 0.0743 - acc: 0.976 - ETA: 7:30 - loss: 0.0741 - acc: 0.976 - ETA: 7:28 - loss : 0.0746 - acc: 0.977 - ETA: 7:27 - loss: 0.0742 - acc: 0.976 - ETA: 7:28 - loss: 0.0740 - acc: 0. 976 - ETA: 7:25 - loss: 0.0715 - acc: 0.977 - ETA: 7:23 - loss: 0.0694 - acc: 0.978 - ETA: 7:21 - loss: 0.0715 - acc: 0.977 - ETA: 7:19 - loss: 0.0714 - acc: 0.977 - ETA: 7:17 - loss: 0.0743 - acc : 0.976 - ETA: 7:17 - loss: 0.0742 - acc: 0.976 - ETA: 7:15 - loss: 0.0731 - acc: 0.976 - ETA: 7:1 3 - loss: 0.0715 - acc: 0.977 - ETA: 7:11 - loss: 0.0709 - acc: 0.977 - ETA: 7:10 - loss: 0.0714 - acc: 0.977 - ETA: 7:11 - loss: 0.0711 - acc: 0.976 - ETA: 7:09 - loss: 0.0707 - acc: 0.976 - ETA: 7:08 - loss: 0.0709 - acc: 0.976 - ETA: 7:06 - loss: 0.0697 - acc: 0.977 - ETA: 7:04 - loss: 0.068 4 - acc: 0.977 - ETA: 7:03 - loss: 0.0678 - acc: 0.978 - ETA: 7:01 - loss: 0.0698 - acc: 0.977 - E TA: 7:01 - loss: 0.0710 - acc: 0.977 - ETA: 6:59 - loss: 0.0710 - acc: 0.977 - ETA: 6:58 - loss: 0 .0696 - acc: 0.977 - ETA: 6:56 - loss: 0.0696 - acc: 0.977 - ETA: 6:56 - loss: 0.0689 - acc: 0.977 - ETA: 6:54 - loss: 0.0676 - acc: 0.978 - ETA: 6:53 - loss: 0.0672 - acc: 0.977 - ETA: 6:52 - loss : 0.0664 - acc: 0.978 - ETA: 6:51 - loss: 0.0661 - acc: 0.978 - ETA: 6:50 - loss: 0.0659 - acc: 0. 978 - ETA: 6:49 - loss: 0.0655 - acc: 0.978 - ETA: 6:48 - loss: 0.0656 - acc: 0.977 - ETA: 6:46 - loss: 0.0652 - acc: 0.978 - ETA: 6:45 - loss: 0.0666 - acc: 0.977 - ETA: 6:43 - loss: 0.0678 - acc : 0.977 - ETA: 6:42 - loss: 0.0678 - acc: 0.977 - ETA: 6:41 - loss: 0.0702 - acc: 0.977 - ETA: 6:3 9 - loss: 0.0702 - acc: 0.977 - ETA: 6:38 - loss: 0.0719 - acc: 0.976 - ETA: 6:37 - loss: 0.0718 - acc: 0.976 - ETA: 6:35 - loss: 0.0723 - acc: 0.976 - ETA: 6:34 - loss: 0.0739 - acc: 0.976 - ETA: 6:33 - loss: 0.0736 - acc: 0.975 - ETA: 6:32 - loss: 0.0729 - acc: 0.976 - ETA: 6:30 - loss: 0.072 7 - acc: 0.976 - ETA: 6:29 - loss: 0.0720 - acc: 0.976 - ETA: 6:28 - loss: 0.0716 - acc: 0.976 - E TA: 6:26 - loss: 0.0712 - acc: 0.976 - ETA: 6:25 - loss: 0.0706 - acc: 0.977 - ETA: 6:24 - loss: 0 .0706 - acc: 0.976 - ETA: 6:23 - loss: 0.0703 - acc: 0.977 - ETA: 6:21 - loss: 0.0715 - acc: 0.976 - ETA: 6:20 - loss: 0.0724 - acc: 0.976 - ETA: 6:19 - loss: 0.0717 - acc: 0.976 - ETA: 6:18 - loss : 0.0716 - acc: 0.976 - ETA: 6:17 - loss: 0.0714 - acc: 0.976 - ETA: 6:16 - loss: 0.0711 - acc: 0. 976 - ETA: 6:14 - loss: 0.0706 - acc: 0.977 - ETA: 6:13 - loss: 0.0708 - acc: 0.976 - ETA: 6:12 - loss: 0.0707 - acc: 0.976 - ETA: 6:11 - loss: 0.0706 - acc: 0.976 - ETA: 6:11 - loss: 0.0702 - acc : 0.976 - ETA: 6:10 - loss: 0.0696 - acc: 0.976 - ETA: 6:09 - loss: 0.0710 - acc: 0.976 - ETA: 6:0 8 - loss: 0.0705 - acc: 0.976 - ETA: 6:07 - loss: 0.0702 - acc: 0.976 - ETA: 6:05 - loss: 0.0713 - acc: 0.976 - ETA: 6:04 - loss: 0.0716 - acc: 0.976 - ETA: 6:04 - loss: 0.0712 - acc: 0.976 - ETA: 6:02 - loss: 0.0715 - acc: 0.976 - ETA: 6:01 - loss: 0.0720 - acc: 0.975 - ETA: 6:00 - loss: 0.071 4 - acc: 0.976 - ETA: 5:59 - loss: 0.0718 - acc: 0.975 - ETA: 5:58 - loss: 0.0719 - acc: 0.975 - E TA: 5:57 - loss: 0.0723 - acc: 0.975 - ETA: 5:56 - loss: 0.0719 - acc: 0.975 - ETA: 5:55 - loss: 0 .0715 - acc: 0.975 - ETA: 5:54 - loss: 0.0716 - acc: 0.974 - ETA: 5:53 - loss: 0.0712 - acc: 0.975 - ETA: 5:52 - loss: 0.0709 - acc: 0.975 - ETA: 5:51 - loss: 0.0707 - acc: 0.975 - ETA: 5:50 - loss : 0.0707 - acc: 0.975 - ETA: 5:49 - loss: 0.0714 - acc: 0.975 - ETA: 5:48 - loss: 0.0712 - acc: 0. 975 - ETA: 5:47 - loss: 0.0714 - acc: 0.975 - ETA: 5:46 - loss: 0.0714 - acc: 0.975 - ETA: 5:45 - loss: 0.0709 - acc: 0.975 - ETA: 5:44 - loss: 0.0711 - acc: 0.975 - ETA: 5:42 - loss: 0.0707 - acc : 0.975 - ETA: 5:41 - loss: 0.0712 - acc: 0.974 - ETA: 5:40 - loss: 0.0712 - acc: 0.974 - ETA: 5:3 9 - loss: 0.0709 - acc: 0.974 - ETA: 5:38 - loss: 0.0705 - acc: 0.974 - ETA: 5:37 - loss: 0.0707 - acc: 0.974 - ETA: 5:36 - loss: 0.0709 - acc: 0.974 - ETA: 5:35 - loss: 0.0707 - acc: 0.974 - ETA: 5:34 - loss: 0.0706 - acc: 0.975 - ETA: 5:33 - loss: 0.0708 - acc: 0.974 - ETA: 5:32 - loss: 0.070 9 - acc: 0.974 - ETA: 5:31 - loss: 0.0706 - acc: 0.975 - ETA: 5:31 - loss: 0.0703 - acc: 0.975 - E TA: 5:30 - loss: 0.0708 - acc: 0.974 - ETA: 5:29 - loss: 0.0708 - acc: 0.974 - ETA: 5:28 - loss: 0 .0712 - acc: 0.974 - ETA: 5:26 - loss: 0.0713 - acc: 0.974 - ETA: 5:25 - loss: 0.0715 - acc: 0.974 - ETA: 5:24 - loss: 0.0717 - acc: 0.974 - ETA: 5:23 - loss: 0.0717 - acc: 0.974 - ETA: 5:23 - loss : 0.0723 - acc: 0.974 - ETA: 5:21 - loss: 0.0732 - acc: 0.973 - ETA: 5:20 - loss: 0.0729 - acc: 0.

973 - ETA: 5:19 - loss: 0.0732 - acc: 0.973 - ETA: 5:18 - loss: 0.0738 - acc: 0.973 - ETA: 5:17 - loss: 0.0737 - acc: 0.973 - ETA: 5:16 - loss: 0.0745 - acc: 0.973 - ETA: 5:15 - loss: 0.0744 - acc: 0.973 - ETA: 5:14 - loss: 0.0742 - acc: 0.973 - ETA: 5:13 - loss: 0.0742 - acc: 0.973 - ETA: 5:12 - loss: 0.0743 - acc: 0.973 - ETA: 5:11 - loss: 0.0743 - acc: 0.973 - ETA: 5:10 - loss: 0.0743 - acc: 0.973 - ETA: 5:09 - loss: 0.0742 - acc: 0.973 - ETA: 5:08 - loss: 0.0741 - acc: 0.973 - ETA: 5:07 - loss: 0.0747 - acc: 0.973 - ETA: 5:06 - loss: 0.0754 - acc: 0.973 - ETA: 5:04 - loss: 0.0761 - acc: 0.972 - ETA: 5:03 - loss: 0.0763 - acc: 0.972 - ETA: 5:03 - loss: 0.0776 - acc: 0.972 - ETA: 5:01 - loss: 0.0776 - acc: 0.972 - ETA: 5:00 - loss: 0.0775 - acc: 0.972 - ETA: 4:59 - loss: 0.0783 - acc: 0.972 - ETA: 4:58 - loss: 0.0787 - acc: 0.971 - ETA: 4:57 - loss: 0.0785 - acc: 0.972 - ETA: 4:56 - loss: 0.0788 - acc: 0.971 - ETA: 4:55 - loss: 0.0796 - acc: 0.971 - ETA: 4:54 - loss: 0.0795 - acc: 0.971 - ETA: 4:53 - loss: 0.0797 - acc: 0.971 - ETA: 4:52 - loss: 0.0796 - acc: 0.971 - ETA: 4:51 - loss: 0.0802 - acc: 0.971 - ETA: 4:50 - loss: 0.0802 - acc: 0.971 - ETA: 4:49 - loss: 0.0804 - acc: 0.971 - ETA: 4:48 - loss: 0.0805 - acc: 0.971 - ETA: 4:47 - loss: 0.0804 - acc: 0.971 - ETA: 4:46 - loss: 0.0803 - acc: 0.971 - ETA: 4:45 - loss: 0.0801 - acc: 0.971 - ETA: 4:44 - loss: 0.0802 - acc: 0.971 - ETA: 4:43 - loss: 0.0804 - acc: 0.971 - ETA: 4:42 - loss: 0.0804 - acc: 0.971 - ETA: 4:41 - loss: 0.0806 - acc: 0.971 - ETA: 4:40 - loss: 0.0812 - acc: 0.971 - ETA: 4:39 - loss: 0.0814 - acc: 0.970 - ETA: 4:38 - loss: 0.0811 - acc: 0.971 - ETA: 4:37 - loss: 0.0811 - acc: 0.971 - ETA: 4:36 - loss: 0.0811 - acc: 0.971 - ETA: 4:35 - loss: 0.0812 - acc: 0.971 - ETA: 4:34 - loss: 0.0815 - acc: 0.970 - ETA: 4:33 - loss: 0.0812 - acc: 0.971 - ETA: 4:32 - loss: 0.0818 - acc: 0.971 - ETA: 4:31 - loss: 0.0816 - acc: 0.971 - ETA: 4:30 - loss: 0.0817 - acc: 0.971 - ETA: 4:28 - loss: 0.0815 - acc: 0.971 - ETA: 4:27 - loss: 0.0812 - acc: 0.971 - ETA: 4:26 - loss: 0.0810 - acc: 0.971 - ETA: 4:25 - loss: 0.0813 - acc: 0.971 - ETA: 4:24 - loss: 0.0812 - acc: 0.971 - ETA: 4:23 - loss: 0.0814 - acc: 0.971 - ETA: 4:22 - loss: 0.0810 - acc: 0.971 - ETA: 4:21 - loss: 0.0811 - acc: 0.971 - ETA: 4:20 - loss: 0.0809 - acc: 0.971 - ETA: 4:19 - loss: 0.0807 - acc: 0.971 - ETA: 4:18 - loss: 0.0809 - acc: 0.971 - ETA: 4:17 - loss: 0.0809 - acc: 0.971 - ETA: 4:16 - loss: 0.0807 - acc: 0.971 - ETA: 4:15 - loss: 0.0812 - acc: 0.971 - ETA: 4:14 - loss: 0.0812 - acc: 0.971 - ETA: 4:13 - loss: 0.0816 - acc: 0.970 - ETA: 4:12 - loss: 0.0820 - acc: 0.970 - ETA: 4:11 - loss: 0.0818 - acc: 0.970 - ETA: 4:10 - loss: 0.0818 - acc: 0.970 - ETA: 4:09 - loss: 0.0818 - acc: 0.970 - ETA: 4:08 - loss: 0.0818 - acc: 0.970726176/28000
[=============================>..] - ETA: 4:07 - loss: 0.0817 - acc: 0.970 - ETA: 4:06 - loss: 0.0816 - acc: 0.970 - ETA: 4:05 - loss: 0.0816 - acc: 0.970 - ETA: 4:04 - loss: 0.0816 - acc: 0.970 - ETA: 4:03 - loss: 0.0815 - acc: 0.970 - ETA: 4:02 - loss: 0.0814 - acc: 0.970 - ETA: 4:01 - loss: 0.0813 - acc: 0.970 - ETA: 4:00 - loss: 0.0813 - acc: 0.970 - ETA: 3:59 - loss: 0.0813 - acc: 0.970 - ETA: 3:57 - loss: 0.0811 - acc: 0.970 - ETA: 3:56 - loss: 0.0811 - acc: 0.970 - ETA: 3:55 - loss: 0.0809 - acc: 0.971 - ETA: 3:54 - loss: 0.0806 - acc: 0.971 - ETA: 3:53 - loss: 0.0808 - acc: 0.971 - ETA: 3:52 - loss: 0.0807 - acc: 0.971 - ETA: 3:51 - loss: 0.0811 - acc: 0.971 - ETA: 3:50 - loss: 0.0811 - acc: 0.971 - ETA: 3:49 - loss: 0.0810 - acc: 0.970 - ETA: 3:48 - loss: 0.0809 - acc: 0.971 - ETA: 3:47 - loss: 0.0809 - acc: 0.971 - ETA: 3:45 - loss: 0.0807 - acc: 0.971 - ETA: 3:44 - loss: 0.0808 - acc: 0.971 - ETA: 3:43 - loss: 0.0810 - acc: 0.971 - ETA: 3:42 - loss: 0.0811 - acc: 0.971 - ETA: 3:41 - loss: 0.0809 - acc: 0.971 - ETA: 3:40 - loss: 0.0807 - acc: 0.971 - ETA: 3:39 - loss: 0.0804 - acc: 0.971 - ETA: 3:38 - loss: 0.0806 - acc: 0.971 - ETA: 3:37 - loss: 0.0808 - acc: 0.971 - ETA: 3:36 - loss: 0.0809 - acc: 0.971 - ETA: 3:35 - loss: 0.0807 - acc: 0.971 - ETA: 3:34 - loss: 0.0806 - acc: 0.971 - ETA: 3:33 - loss: 0.0807 - acc: 0.971 - ETA: 3:32 - loss: 0.0809 - acc: 0.971 - ETA: 3:31 - loss: 0.0808 - acc: 0.971 - ETA: 3:30 - loss: 0.0807 - acc: 0.971 - ETA: 3:29 - loss: 0.0809 - acc: 0.971 - ETA: 3:28 - loss: 0.0809 - acc: 0.971 - ETA: 3:26 - loss: 0.0808 - acc: 0.971 - ETA: 3:25 - loss: 0.0806 - acc: 0.971 - ETA: 3:24 - loss: 0.0809 - acc: 0.971 - ETA: 3:23 - loss: 0.0810 - acc: 0.971 - ETA: 3:22 - loss: 0.0810 - acc: 0.971 - ETA: 3:21 - loss: 0.0810 - acc: 0.971 - ETA: 3:20 - loss: 0.0809 - acc: 0.971 - ETA: 3:19 - loss: 0.0808 - acc: 0.971 - ETA: 3:18 - loss: 0.0807 - acc: 0.971 - ETA: 3:17 - loss: 0.0809 - acc: 0.971 - ETA: 3:16 - loss: 0.0810 - acc: 0.971 - ETA: 3:15 - loss: 0.0814 - acc: 0.971 - ETA: 3:14 - loss: 0.0813 - acc: 0.971 - ETA: 3:12 - loss: 0.0814 - acc: 0.971 - ETA: 3:11 - loss: 0.0813 - acc: 0.971 - ETA: 3:10 - loss: 0.0815 - acc: 0.971 - ETA: 3:09 - loss: 0.0816 - acc: 0.971 - ETA: 3:08 - loss: 0.0814 - acc: 0.971 - ETA: 3:07 - loss: 0.0811 - acc: 0.971 - ETA: 3:06 - loss: 0.0814 - acc: 0.971 - ETA: 3:05 - loss: 0.0812 - acc: 0.971 - ETA: 3:04 - loss: 0.0811 - acc: 0.971 - ETA: 3:03 - loss: 0.0810 - acc: 0.971 - ETA: 3:02 - loss: 0.0810 - acc: 0.971 - ETA: 3:01 - loss: 0.0808 - acc: 0.971 - ETA: 3:00 - loss: 0.0806 - acc: 0.971 - ETA: 2:59 - loss: 0.0808 - acc: 0.971 - ETA: 2:58 - loss: 0.0810 - acc: 0.971 - ETA: 2:56 - loss: 0.0813 - acc: 0.971 - ETA: 2:55 - loss: 0.0812 - acc: 0.971 - ETA: 2:54 - loss: 0.0810 - acc: 0.971 - ETA: 2:53 - loss: 0.0810 - acc: 0.971 - ETA: 2:52 - loss: 0.0815 - acc: 0.971 - ETA: 2:51 - loss: 0.0814 - acc: 0.971 - ETA: 2:50 - loss: 0.0814 - acc: 0.970 - ETA: 2:49 - loss: 0.0815 - acc: 0.970 - ETA: 2:48 - loss: 0.0814 - acc: 0.971 - ETA: 2:47 - loss: 0.0815 - acc: 0.971 - ETA: 2:46 - loss: 0.0817 - acc: 0.970 - ETA: 2:45 - loss: 0.0817 - acc: 0.970 - ETA: 2:44 - loss: 0.0816 - acc: 0.971 - ETA: 2:43 - loss: 0.0816 - acc: 0.971 - ETA: 2:42 - loss: 0.0815 - acc: 0.970 - ETA: 2:41 - loss: 0.0816 - acc: 0.970 - ETA: 2:40 - loss: 0.0815 - acc: 0.970 - ETA: 2:39 - loss: 0.0815 - acc: 0.970 - ETA: 2:38 - loss: 0.0819 - acc: 0.970 - ETA: 2:37 - loss: 0.0819 - acc: 0.970 - ETA: 2:36 - loss: 0.0820 - acc: 0.970 - ETA: 2:35 - loss: 0.0820 - acc: 0.970 - ETA: 2:34 - loss: 0.0820 - acc: 0.970 - ETA: 2:32 - loss: 0.0819 - acc: 0.970 - ETA: 2:31 - loss: 0.0822 - acc: 0.970 - ETA: 2:30 - loss: 0.0822 - acc: 0.970 - ETA: 2:29 - loss: 0.0820 - acc: 0.970 - ETA: 2:28 - loss: 0.0818 - acc: 0.970 - ETA: 2:27 - loss: 0.0817 - acc: 0.970 - ETA: 2:27 - loss: 0.0816 - acc: 0.970 - ETA: 2:26 - loss: 0.0815 - acc: 0.970 - ETA: 2:25 - loss: 0.0815 - acc: 0.970 - ETA: 2:24 - loss: 0.0816 - acc: 0.970 - ETA: 2:23 - loss: 0.0816 - acc: 0.970 - ETA: 2:22 - loss: 0.0815 - acc: 0.970 - ETA: 2:21 - loss: 0.0814 - acc: 0.970 - ETA: 2:20 - loss: 0.0817 - acc: 0.970 - ETA: 2:19 - loss: 0.0817 - acc: 0.970 - ETA: 2:18 - loss: 0.0818 - acc: 0.970 - ETA: 2:17 - loss: 0.0820 - acc: 0.970 - ETA: 2:16 - loss: 0.0819 - acc: 0.970 - ETA: 2:15 - loss: 0.0818 - acc: 0.970 - ETA: 2:14 - loss: 0.0818 - acc: 0.970 - ETA: 2:13 - loss: 0.0816 - acc: 0.970 - ETA: 2:12 - loss: 0.0817 - acc: 0.970 - ETA: 2:11 - loss: 0.0817 - acc: 0.970 - ETA: 2:10 - loss: 0.0819 - acc: 0.970 - ETA: 2:09 - loss: 0.0823 - acc: 0.970 - ETA: 2:08 - loss: 0.0823 - acc: 0.970 - ETA: 2:07 - loss: 0.0825 - acc: 0.970 - ETA: 2:06 - loss: 0.0824 - acc: 0.970
- ETA: 2:05 - loss: 0.0824 - acc: 0.970 - ETA: 2:04 - loss: 0.0824 - acc: 0.970 - ETA: 2:03 - l

- ETA: 2:05 - loss: 0.0824 - acc: 0.970 - ETA: 2:04 - loss: 0.0824 - acc: 0.970 - ETA: 2:03 - loss: 0.0826 - acc: 0.970 - ETA: 2:02 - loss: 0.0826 - acc: 0.970 - ETA: 2:01 - loss: 0.0825 - acc: 0.970 - ETA: 1:59 - loss: 0.0829 - acc: 0.970 - ETA: 1:58 - loss: 0.0827 - acc: 0.970 - ETA: 1:57 - loss: 0.0827 - acc: 0.970 - ETA: 1:56 - loss: 0.0831 - acc: 0.969 - ETA: 1:55 - loss: 0.0831 - acc: 0.969 - ETA: 1:54 - loss: 0.0831 - acc: 0.969 - ETA: 1:53 - loss: 0.0832 - acc: 0.969 - ETA: 1:52 - loss: 0.0833 - acc: 0.969 - ETA: 1:51 - loss: 0.0836 - acc: 0.969 - ETA: 1:50 - loss: 0.0836 - acc: 0.969 - ETA: 1:49 - loss: 0.0835 - acc: 0.969 - ETA: 1:48 - loss: 0.0835 - acc: 0.969 - ETA: 1:47 - loss: 0.0838 - acc: 0.969 - ETA: 1:46 - loss: 0.0838 - acc: 0.969 - ETA: 1:45 - loss: 0.0839 - acc: 0.969 - ETA: 1:44 - loss: 0.0839 - acc: 0.969 - ETA: 1:42 - loss: 0.0839 - acc: 0.969 - ETA: 1:41 - loss: 0.0838 - acc: 0.969 - ETA: 1:40 - loss: 0.0837 - acc: 0.969 - ETA: 1:39 - loss: 0.0839 - acc: 0.969 - ETA: 1:38 - loss: 0.0838 - acc: 0.969 - ETA: 1:37 - loss: 0.0839 - acc: 0.969 - ETA: 1:36 - loss: 0.0840 - acc: 0.969 - ETA: 1:35 - loss: 0.0839 - acc: 0.969 - ETA: 1:34 - loss: 0.0838 - acc: 0.969 - ETA: 1:33 - loss: 0.0838 - acc: 0.969 - ETA: 1:32 - loss: 0.0837 - acc: 0.969 - ETA: 1:30 - loss: 0.0836 - acc: 0.969 - ETA: 1:29 - loss: 0.0834 - acc: 0.969 - ETA: 1:28 - loss: 0.0833 - acc: 0.969 - ETA: 1:27 - loss: 0.0831 - acc: 0.969 - ETA: 1:26 - loss: 0.0831 - acc: 0.969 - ETA: 1:25 - loss: 0.0834 - acc: 0.969 - ETA: 1:24 - loss: 0.0835 - acc: 0.969 - ETA: 1:23 - loss: 0.0836 - acc: 0.969 - ETA: 1:22 - loss: 0.0835 - acc: 0.969 - ETA: 1:21 - loss: 0.0835 - acc: 0.969 - ETA: 1:19 - loss: 0.0838 - acc: 0.969 - ETA: 1:18 - loss: 0.0839 - acc: 0.969 - ETA: 1:17 - loss: 0.0839 - acc: 0.969 - ETA: 1:16 - loss: 0.0840 - acc: 0.969 - ETA: 1:15 - loss: 0.0838 - acc: 0.969 - ETA: 1:14 - loss: 0.0841 - acc: 0.969 - ETA: 1:13 - loss: 0.0842 - acc: 0.969 - ETA: 1:12 - loss: 0.0842 - acc: 0.969 - ETA: 1:11 - loss: 0.0841 - acc: 0.969 - ETA: 1:10 - loss: 0.0849 - acc: 0.969 - ETA: 1:09 - loss: 0.0851 - acc: 0.969 - ETA: 1:08 - loss: 0.0852 - acc: 0.969 - ETA: 1:06 - loss: 0.0853 - acc: 0.969 - ETA: 1:05 - loss: 0.0853 - acc: 0.969 - ETA: 1:04 - loss: 0.0854 - acc: 0.968 - ETA: 1:03 - loss: 0.0854 - acc: 0.968 - ETA: 1:02 - loss: 0.0855 - acc: 0.968 - ETA: 1:01 - loss: 0.0856 - acc: 0.968 - ETA: 1:00 - loss: 0.0857 - acc: 0.968 - ETA: 59s - loss: 0.0856 - acc: 0.968 - ETA: 58s - loss: 0.0856 - acc: 0.96 - ETA: 57s - loss: 0.0856 - acc: 0.96 - ETA: 56s - loss: 0.0857 - acc: 0.96 - ETA: 55s - loss: 0.0859 - acc: 0.96 - ETA: 53s - loss: 0.0860 - acc: 0.96 - ETA: 52s - loss: 0.0860 - acc: 0.96 - ETA: 51s - loss: 0.0862 - acc: 0.96 - ETA: 50s - loss: 0.0863 - acc: 0.96 - ETA: 49s - loss: 0.0863 - acc: 0.96 - ETA: 48s - loss: 0.0864 - acc: 0.96 - ETA: 47s - loss: 0.0864 - acc: 0.96 - ETA: 46s - loss: 0.0865 - acc: 0.96 - ETA: 45s - loss: 0.0866 - acc: 0.96 - ETA: 44s - loss: 0.0867 - acc: 0.96 - ETA: 43s - loss: 0.0868 - acc: 0.96 - ETA: 42s - loss: 0.0867 - acc: 0.96 - ETA: 41s - loss: 0.0869 - acc: 0.96 - ETA: 39s - loss: 0.0867 - acc: 0.96 - ETA: 38s - loss: 0.0867 - acc: 0.96 - ETA: 37s - loss: 0.0868 - acc: 0.96 - ETA: 36s - loss: 0.0868 - acc: 0.96 - ETA: 35s - loss: 0.0867 - acc: 0.96 - ETA: 34s - loss: 0.0867 - acc: 0.96 - ETA: 33s - loss: 0.0869 - acc: 0.96 - ETA: 32s - loss: 0.0869 - acc: 0.96 - ETA: 31s - loss: 0.0868 - acc: 0.968328000/28000 [==============================] - ETA: 30s - loss: 0.0871 - acc: 0.96 - ETA: 29s - loss: 0.0869 - acc: 0.96 - ETA: 27s - loss: 0.0869 - acc: 0.96 - ETA: 26s - loss: 0.0868 - acc: 0.96 - ETA: 25s - loss: 0.0868 - acc: 0.96 - ETA: 24s - loss: 0.0869 - acc: 0.96 - ETA: 23s - loss: 0.0868 - acc: 0.96 - ETA: 22s - loss: 0.0867 - acc: 0.96 - ETA: 21s - loss: 0.0866 - acc: 0.96 - ETA: 20s - loss: 0.0867 - acc: 0.96 - ETA: 19s - loss: 0.0869 - acc: 0.96 - ETA: 18s - loss: 0.0871 - acc: 0.96 - ETA: 16s - loss: 0.0873 - acc: 0.96 - ETA: 15s - loss: 0.0872 - acc: 0.96 - ETA: 14s - loss: 0.0872 - acc: 0.96 - ETA: 13s - loss: 0.0874 - acc: 0.96 - ETA: 12s - loss: 0.0873 - acc: 0.96 - ETA: 11s - loss: 0.0873 - acc: 0.96 - ETA: 10s - loss: 0.0874 - acc: 0.96 - ETA: 9s - loss: 0.0874 - acc: 0.9681 - ETA: 8s - loss: 0.0875 - acc: 0.968 - ETA: 7s - loss: 0.0879 - acc: 0.967 - ETA: 6s - loss: 0.0880 - acc: 0.967 - ETA: 4s - loss: 0.0881 - acc: 0.967 - ETA: 3s - loss: 0.0882 - acc: 0.967 - ETA: 2s - loss: 0.0884 - acc: 0.967 - ETA: 1s - loss: 0.0885 - acc: 0.967 - ETA: 0s - loss: 0.0885 - acc: 0.967 - 506s 18ms/step - loss: 0.0884 - acc: 0.9677 - val_loss: 0.2993 - val_acc: 0.9017
Test loss: 0.27543443738420803
Test accuracy: 0.9102666666984558

In [0]:

```
print('Test loss:', score[0])
print('Test accuracy:', score[1])
```

Test loss: 0.27543443738420803
Test accuracy: 0.9102666666984558

In [0]:

```
val_loss = result.history['val_loss']
train_loss = result.history['loss']
x = list(np.arange(1,6))
plt.figure(figsize = (20,10))
plt.grid()
sns.lineplot(x=x,y = val_loss,color = 'blue',label = 'Validation Loss')
sns.lineplot(x=x,y=train_loss,color = 'red',label = 'Training Loss')
plt.legend()
plt.title("Validation Loss vs Training Loss")
sns.despine()
```

Validation Loss vs Training Loss

18

— Validation Loss
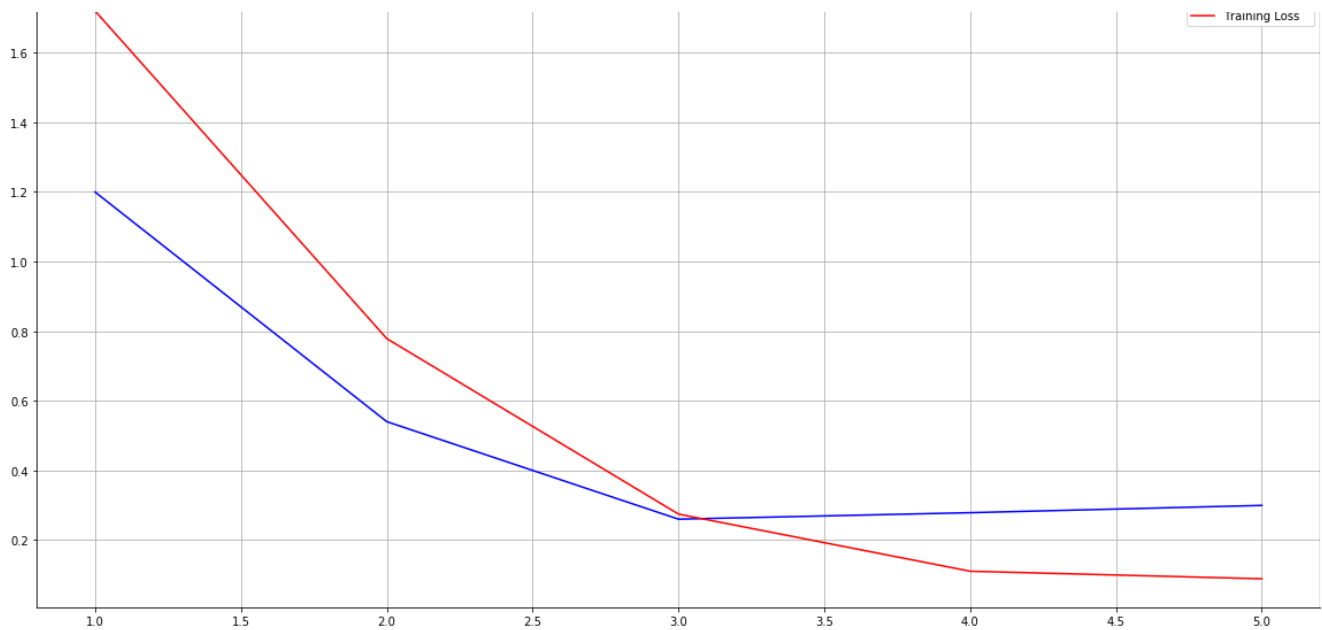
Earlier the model was overfitting so we try different method like dropout, batchnormalization but most effective was adding L1 and L2 regularizer.

Weights Distribution Of Different Layers

In [0]:

```python
embed_wgt  = model_lstm_1.get_weights()[0]
lstm_wgt = model_lstm_1.get_weights()[6]
plt.figure(figsize = (20,10))
plt.subplot(1,2,1)
sns.violinplot(y= embed_wgt,color = 'y',label = "Embedded layers weights")
plt.subplot(1,2,2)
sns.violinplot(y = lstm_wgt,color = 'blue',label = "LSTM layers weights")
plt.suptitle("Weight Distribution", fontsize = 20)
sns.despine()
```

Weight Distribution
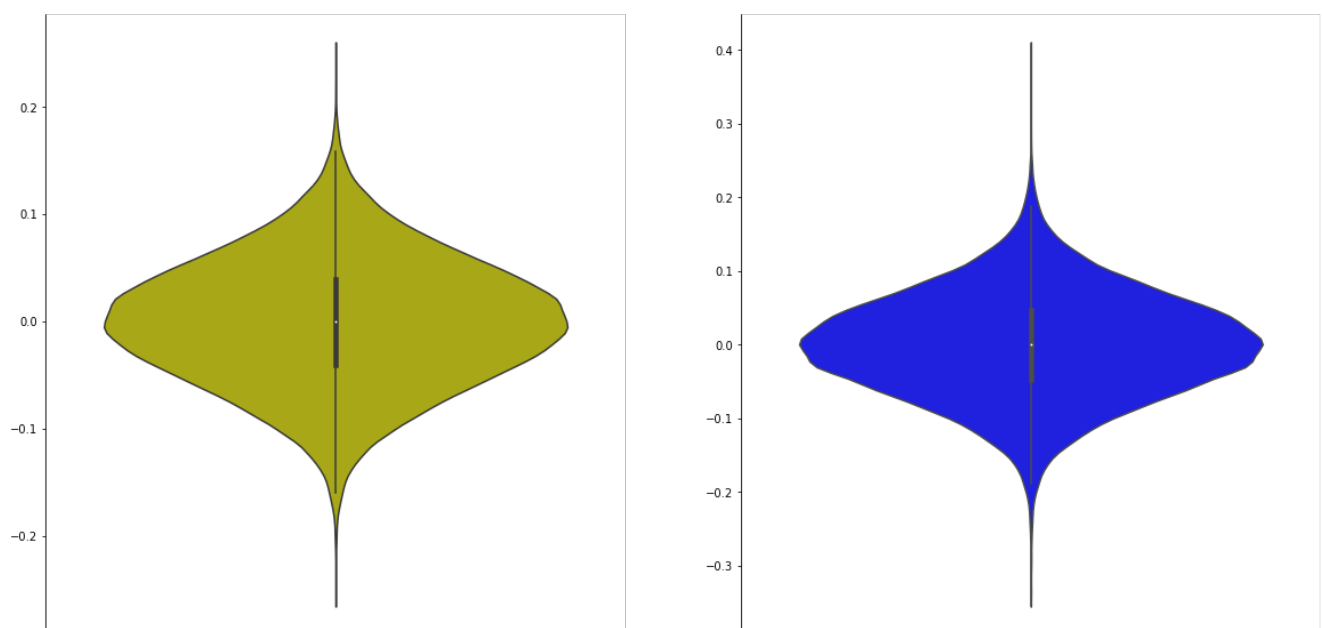
Model with 2 LSTM Layers

```python
from keras.layers import BatchNormalization,Activation
from keras.regularizers import L1L2
reg = L1L2(0.01,0.01)
embed_layer = 32
model_lstm_2 = Sequential()
model_lstm_2.add(Embedding(5000,embed_layer,input_length=max_seq))
model_lstm_2.add(BatchNormalization())
model_lstm_2.add(Dropout(0.3))
model_lstm_2.add(LSTM(100,bias_regularizer=reg,return_sequences=True))
model_lstm_2.add(Dropout(0.3))
model_lstm_2.add(LSTM(50,bias_regularizer=reg))
model_lstm_2.add(Dropout(0.3))
model_lstm_2.add(Dense(1,activation='sigmoid'))
model_lstm_2.summary()
```

```
WARNING: Logging before flag parsing goes to stderr.
W0828 02:06:07.321551 139999701084032 deprecation_wrapper.py:119] From
/usr/local/lib/python3.6/dist-packages/keras/backend/tensorflow_backend.py:74: The name
tf.get_default_graph is deprecated. Please use tf.compat.v1.get_default_graph instead.

W0828 02:06:07.367465 139999701084032 deprecation_wrapper.py:119] From
/usr/local/lib/python3.6/dist-packages/keras/backend/tensorflow_backend.py:517: The name
tf.placeholder is deprecated. Please use tf.compat.v1.placeholder instead.

W0828 02:06:07.375101 139999701084032 deprecation_wrapper.py:119] From
/usr/local/lib/python3.6/dist-packages/keras/backend/tensorflow_backend.py:4138: The name
tf.random_uniform is deprecated. Please use tf.random.uniform instead.

W0828 02:06:07.488608 139999701084032 deprecation_wrapper.py:119] From
/usr/local/lib/python3.6/dist-packages/keras/backend/tensorflow_backend.py:133: The name
tf.placeholder_with_default is deprecated. Please use tf.compat.v1.placeholder_with_default instea
d.

W0828 02:06:07.512006 139999701084032 deprecation.py:506] From /usr/local/lib/python3.6/dist-
packages/keras/backend/tensorflow_backend.py:3445: calling dropout (from
tensorflow.python.ops.nn_ops) with keep_prob is deprecated and will be removed in a future
version.
Instructions for updating:
Please use `rate` instead of `keep_prob`. Rate should be set to `rate = 1 - keep_prob`.
```

```
_____
Layer (type)                 Output Shape              Param #
=================================================================
embedding_1 (Embedding)      (None, 500, 32)           160000
_____
batch_normalization_1 (Batch (None, 500, 32)           128
_____
dropout_1 (Dropout)          (None, 500, 32)           0
_____
lstm_1 (LSTM)                (None, 500, 100)          53200
_____
dropout_2 (Dropout)          (None, 500, 100)          0
_____
lstm_2 (LSTM)                (None, 50)                30200
_____
dropout_3 (Dropout)          (None, 50)                0
_____
dense_1 (Dense)              (None, 1)                 51
=================================================================
Total params: 243,579
Trainable params: 243,515
Non-trainable params: 64
_____
```

In [27]:

```python
model_lstm_2.compile(loss = 'binary_crossentropy',optimizer = 'adam',metrics = ['accuracy'])
result_2 = model_lstm_2.fit(X_train,y_train,epochs=5,batch_size=64,validation_split=0.2)
score_2 = model_lstm_2.evaluate(X_test,y_test,verbose=0)
```

```
W0828 02:06:13.582489 139999701084032 deprecation_wrapper.py:119] From
```

```
Train on 28000 samples, validate on 7000 samples
Epoch 1/5
28000/28000 [==============================] - 564s 20ms/step - loss: 2.4393 - acc: 0.8881 - val_l
oss: 1.6585 - val_acc: 0.9031
Epoch 2/5
28000/28000 [==============================] - 570s 20ms/step - loss: 1.0814 - acc: 0.9302 - val_l
oss: 0.7048 - val_acc: 0.9074
Epoch 3/5
28000/28000 [==============================] - 566s 20ms/step - loss: 0.3321 - acc: 0.9480 - val_l
oss: 0.2630 - val_acc: 0.9091
Epoch 4/5
28000/28000 [==============================] - 566s 20ms/step - loss: 0.1115 - acc: 0.9587 - val_l
oss: 0.2718 - val_acc: 0.9053
Epoch 5/5
28000/28000 [==============================] - 567s 20ms/step - loss: 0.0974 - acc: 0.9644 - val_l
oss: 0.3130 - val_acc: 0.9063
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-27-954c4e6b7e69> in <module>()
      2 result_2 = model_lstm_2.fit(X_train,y_train,epochs=5,batch_size=64,validation_split=0.2)
      3 score_2 = model_lstm_2.evaluate(X_test,y_test,verbose=0)
----> 4 print('Test loss:', score_3[0])
      5 print('Test accuracy:', score_3[1])

NameError: name 'score_3' is not defined
```

In [28]:

```python
print('Test loss:', score_2[0])
print('Test accuracy:', score_2[1])
```

```
Test loss: 0.2951615286697944
Test accuracy: 0.9150666666666667
```

In [29]:

```python
val_loss = result_2.history['val_loss']
train_loss = result_2.history['loss']
x = list(np.arange(1,6))
plt.figure(figsize = (20,10))
plt.grid()
sns.lineplot(x=x,y = val_loss,color = 'blue',label = 'Validation Loss')
sns.lineplot(x=x,y=train_loss,color = 'red',label = 'Training Loss')
plt.legend()
plt.title("Validation Loss vs Training Loss")
sns.despine()
```
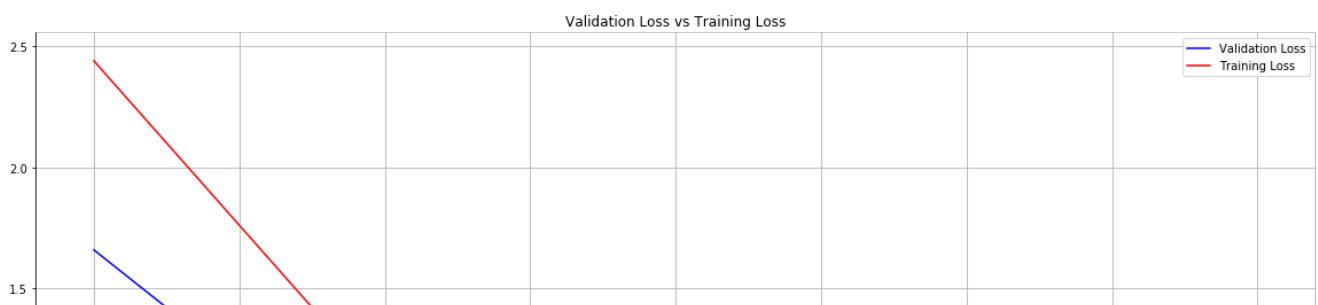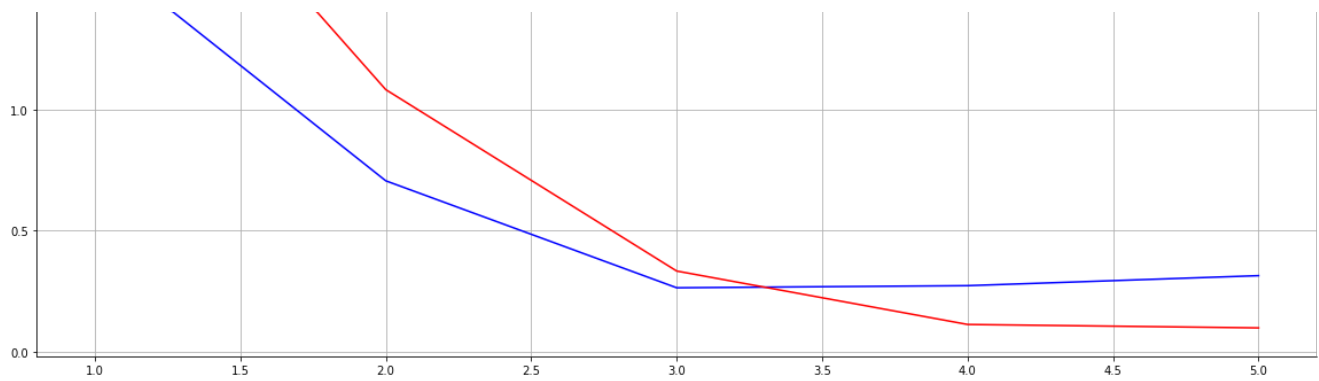
```
len(model_lstm_2.get_weights()[9])
```

50

```
embed_wgt  = model_lstm_2.get_weights()[0]
lstm_wgt_1 = model_lstm_2.get_weights()[6]
lstm_wgt_2 = model_lstm_2.get_weights()[9]
plt.figure(figsize = (10,10))
plt.subplot(1,3,1)
sns.violinplot(y= embed_wgt,color = 'y',label = "Embedded layers weights")
plt.subplot(1,3,2)
sns.violinplot(y = lstm_wgt_1,color = 'blue',label = "LSTM layers weights")
plt.subplot(1,3,3)
sns.violinplot(y = lstm_wgt_2,color = 'red',label = "LSTM layers weights")
plt.suptitle("Weight Distribution", fontsize = 20)
sns.despine()
```
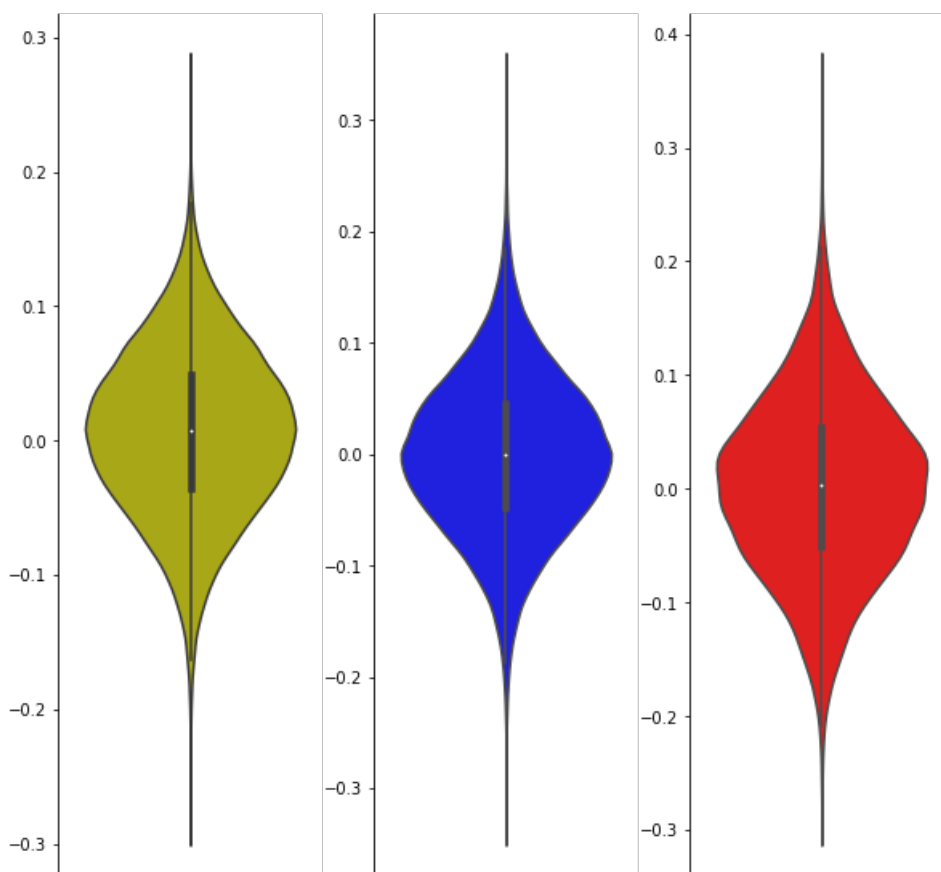
Weight Distribution

Conclusion

```python
from prettytable import PrettyTable
x = PrettyTable()
x.field_names= ["Model","Dropout","BatchNorm","Regularizer","Accuracy","Overfitting"]
x.add_row(["LSTM layer 1", True,True,False,90.628,True])
x.add_row(["LSTM layer 1", True,True,True,91.026,False])
x.add_row(["LSTM layer 2", True,True,True,91.506,False])
print(x)
```

```
+--------------+---------+-----------+-------------+----------+-------------+
|    Model     | Dropout | BatchNorm | Regularizer | Accuracy | Overfitting |
+--------------+---------+-----------+-------------+----------+-------------+
| LSTM layer 1 |  True   |   True    |    False    |  90.628  |    True     |
| LSTM layer 1 |  True   |   True    |    True     |  91.026  |    False    |
| LSTM layer 2 |  True   |   True    |    True     |  91.506  |    False    |
+--------------+---------+-----------+-------------+----------+-------------+
```