In [1]:

```
import pip
# If keras is not install
try:
    __import__('keras')
except ImportError:
    pip.main(['install', 'keras'])

try:
    __import__('h5py')
except ImportError:
    pip.main(['install', 'h5py'])

import numpy as np
from keras.models import Sequential
from keras.layers import Dense, Dropout
from keras.utils import to_categorical

# Using a seed value to allow replicability of the results in generating rando
m numbers
# Those randoms numbers will be use to select randomly indexes(random words in
the reuters dataset)
seed = 1337
np.random.seed(seed)
```

```
Using TensorFlow backend.
```

In [2]:

```
# The reuter is "dataset of 11,228 newswires from Reuters, labeled over 46 top
ics. As with the IMDB dataset, each wire is encoded as a sequence of word inde
xes (same conventions)."
from keras.datasets import reuters

#Select a maximum of 1000 words. It is possible to increase it. But for simpli
city of the model only 1000 words will be picked
max_words = 1000

#Split the dataset into train and test. 20% testing and 80% training
(x_train, y_train), (x_test, y_test) = reuters.load_data(num_words=max_words,
                                                          test_split=0.2,
                                                          seed=seed)
num_classes = np.max(y_train) + 1  # 46 topics
```

```
Downloading data from https://s3.amazonaws.com/text-datasets/reuters.npz
2113536/2110848 [==============================] - 0s 0us/step
```

In [24]:

```
from keras.preprocessing.text import Tokenizer

# Reshape the data to be used by keras models
tokenizer = Tokenizer(num_words=max_words)
x_train = tokenizer.sequences_to_matrix(x_train, mode='binary')
x_test = tokenizer.sequences_to_matrix(x_test, mode='binary')
```

```
In [25]: # Label Encoding
         y_train = to_categorical(y_train,num_classes)
         y_test = to_categorical(y_test,num_classes)
```

```
In [26]: model = Sequential()  # Instantiate sequential model
         model.add(Dense(512,activation='relu',input_shape=(max_words,))) # Add first l
         ayer. Make sure to specify input shape
         model.add(Dropout(0.5)) # Add second layer
         model.add(Dense(num_classes,activation='softmax')) # Add third layer
```

```
In [27]: model.compile(loss='categorical_crossentropy',optimizer='adam',metrics=['accur
         acy'])
```

```
In [28]: from keras import backend as K

         K.set_session(K.tf.Session(config=K.tf.ConfigProto(intra_op_parallelism_thread
         s=1, inter_op_parallelism_threads=1)))
```

```
In [30]: batch_size = 32
         model.fit(x_train,y_train,batch_size = batch_size,epochs = 5, validation_data=
         (x_test,y_test))
         score = model.evaluate(x_test,y_test,verbose=0)
```

```
Train on 8982 samples, validate on 2246 samples
Epoch 1/5
8982/8982 [==============================] - 5s 566us/step - loss: 0.2906 - a
cc: 0.9248 - val_loss: 0.8833 - val_acc: 0.8054
Epoch 2/5
8982/8982 [==============================] - 5s 531us/step - loss: 0.2566 - a
cc: 0.9323 - val_loss: 0.9073 - val_acc: 0.8054
Epoch 3/5
8982/8982 [==============================] - 5s 552us/step - loss: 0.2378 - a
cc: 0.9355 - val_loss: 0.9371 - val_acc: 0.8059
Epoch 4/5
8982/8982 [==============================] - 5s 530us/step - loss: 0.2199 - a
cc: 0.9390 - val_loss: 0.9532 - val_acc: 0.7961
Epoch 5/5
8982/8982 [==============================] - 5s 522us/step - loss: 0.2110 - a
cc: 0.9391 - val_loss: 0.9857 - val_acc: 0.7983
```

```
In [31]: score[1]
```

```
Out[31]: 0.7983081032947462
```

```
In [32]: model.save("model.h5")
```

```
In [33]: !base64 model.h5 > model.h5.base64
```

In [37]:

```
!rm -f rklib.py
!wget https://raw.githubusercontent.com/IBM/coursera/master/rklib.py
```

```
--2019-05-27 19:08:06--  https://raw.githubusercontent.com/IBM/coursera/maste
r/rklib.py
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 199.232.8.
133
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)|199.232.
8.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2540 (2.5K) [text/plain]
Saving to: ‘rklib.py’

100%[======================================>] 2,540       --.-K/s   in 0s

2019-05-27 19:08:06 (52.0 MB/s) - ‘rklib.py’ saved [2540/2540]
```

In [41]:

```
from rklib import submit
key = "XbAMqtjdEeepUgo7OOVwng"
part = "LqPRQ"
email = "hansproject@yahoo.fr"
secret = "GS2QwMhRRSfirpln"

with open('model.h5.base64', 'r') as myfile:
    data=myfile.read()
submit(email, secret, key, part, [part], data)
```

```
Submission successful, please check on the coursera grader page for the statu
s
-------------------------
{"elements":[{"itemId":"ozVf2","id":"tE4j0qhMEeecqgpT6QjMdA~ozVf2~KM8NJYCzEem
QZRJSzsuawA","courseId":"tE4j0qhMEeecqgpT6QjMdA"}],"paging":{},"linked":{}}
-------------------------
```

In [ ]:

```
!pip install --upgrade https://github.com/niketanpansare/future_of_data/raw/ma
ster/systemml-1.1.0-SNAPSHOT-python.tar.gz
!ln -s -f ~/.local/lib/python3.5.site-packages/systemmm/systemml-java/*.jar~/d
ata/libs/
```

```
Collecting https://github.com/niketanpansare/future_of_data/raw/master/system
ml-1.1.0-SNAPSHOT-python.tar.gz
  Using cached https://github.com/niketanpansare/future_of_data/raw/master/sy
stemml-1.1.0-SNAPSHOT-python.tar.gz
Requirement not upgraded as not directly required: numpy>=1.8.2 in /opt/cond
a/envs/DSX-Python35/lib/python3.5/site-packages (from systemml==1.1.0) (1.13.
3)
Requirement not upgraded as not directly required: scipy>=0.15.1 in /opt/cond
a/envs/DSX-Python35/lib/python3.5/site-packages (from systemml==1.1.0) (1.0.
0)
Requirement not upgraded as not directly required: pandas in /opt/conda/envs/
DSX-Python35/lib/python3.5/site-packages (from systemml==1.1.0) (0.21.0)
Requirement not upgraded as not directly required: scikit-learn in /opt/cond
a/envs/DSX-Python35/lib/python3.5/site-packages (from systemml==1.1.0) (0.19.
1)
Requirement not upgraded as not directly required: Pillow>=2.0.0 in /opt/cond
a/envs/DSX-Python35/lib/python3.5/site-packages (from systemml==1.1.0) (4.2.
1)
Requirement not upgraded as not directly required: python-dateutil>=2 in /op
t/conda/envs/DSX-Python35/lib/python3.5/site-packages (from pandas->systemml=
=1.1.0) (2.6.1)
Requirement not upgraded as not directly required: pytz>=2011k in /opt/conda/
envs/DSX-Python35/lib/python3.5/site-packages (from pandas->systemml==1.1.0)
(2018.3)
Requirement not upgraded as not directly required: olefile in /opt/conda/env
s/DSX-Python35/lib/python3.5/site-packages (from Pillow>=2.0.0->systemml==1.
1.0) (0.44)
Requirement not upgraded as not directly required: six>=1.5 in /opt/conda/env
s/DSX-Python35/lib/python3.5/site-packages (from python-dateutil>=2->pandas->
systemml==1.1.0) (1.11.0)
Building wheels for collected packages: systemml
  Running setup.py bdist_wheel for systemml ... -
```

In [1]:

```
!pip install http://download.pytorch.org/whl/cu80/torch-0.3.0.post4-cp27-cp27m
u-linux_x86_64.whl
!pip install torchvision
```

```
torch-0.3.0.post4-cp27-cp27mu-linux_x86_64.whl is not a supported wheel on th
is platform.
Collecting torchvision
  Downloading https://files.pythonhosted.org/packages/44/e9/76f3746e92e473d68
1b844d6d8d7485f6339a0933557fa6c8353b7864cc0/torchvision-0.3.0-cp35-cp35m-many
linux1_x86_64.whl (2.6MB)
    100% |████████████████████████████████| 2.6MB 11.3MB/s ta 0:00:01
Collecting torch>=1.1.0 (from torchvision)
  Downloading https://files.pythonhosted.org/packages/56/9b/a241f6e3d1df013e6
5e0b03b17e46bd9517036cd9ba9d8cb9384df396e3b/torch-1.1.0-cp35-cp35m-manylinux1
_x86_64.whl (676.9MB)
    100% |████████████████████████████████| 676.9MB 48kB/s  eta 0:00:01| 100.
7MB 60.3MB/s eta 0:00:10   17% |█████▌                          | 116.8MB 57.
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| 435.7MB 63.3MB/s eta 0:00:04�██            | 448.0MB 64.7MB/s eta 0:00:04
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58.1MB 64.8MB/s eta 0:00:04MB 60.9MB/s eta 0:00:04    68% |██████████████████
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ta 0:00:0375% |████████████████████████▏        | 510.0MB 67.5MB/s eta 0:00:03
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66.8MB/s eta 0:00:01�█████████████████████████| 670.2MB 65.9MB/s eta 0:00:01
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on3.5/site-packages (from torchvision) (1.13.3)
Requirement already satisfied: six in /opt/conda/envs/DSX-Python35/lib/python
3.5/site-packages (from torchvision) (1.11.0)
Requirement already satisfied: pillow>=4.1.1 in /opt/conda/envs/DSX-Python35/
lib/python3.5/site-packages (from torchvision) (4.2.1)
Requirement already satisfied: olefile in /opt/conda/envs/DSX-Python35/lib/py
thon3.5/site-packages (from pillow>=4.1.1->torchvision) (0.44)
tensorflow 1.3.0 requires tensorflow-tensorboard<0.2.0,>=0.1.0, which is not
 installed.
Installing collected packages: torch, torchvision
Successfully installed torch-1.1.0 torchvision-0.3.0
```