'''

ECE 607 Machine Learning 1 : Python setup

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'''

1.) Install Anaconda

# after installing pycharm install Anaconda

<https://www.continuum.io/downloads>

2.) Configure Conada and install keras in a new conda environment

# I used this link to figure out how to install keras in an conda env on windows

<http://stackoverflow.com/questions/34097988/how-do-i-install-keras-and-theano-in-anaconda-python-on-windows>

(open up a command line by hitting the start menu and typing "cmd" then it should say "command prompt" and hit enter)

# next following the following in the command line : (note: anything not starting with C:\ is an output )

C:\Users\Joe> conda info --envs

# conda environments:

#

root \* C:\Users\Joe\Anaconda3

C:\Users\Joe> conda create --name keras python=3.5

C:\Users\Joe>conda info --envs

# conda environments:

#

keras C:\Users\Joe\Anaconda3\envs\keras

root \* C:\Users\Joe\Anaconda3

C:\Users\Joe>activate keras

(keras) C:\Users\Joe>

(keras) C:\Users\Joe> conda install theano

(keras) C:\Users\Joe> conda install mingw libpython

(keras) C:\Users\Joe> pip install tensorflow

(keras) C:\Users\Joe> pip install keras

(keras) C:\Users\Joe> conda install numpy

(keras) C:\Users\Joe> pip install matplotlib

(keras) C:\Users\Joe> pip install --upgrade tensorflow

3.) Insall pycharm on your system

# Python IDE Pycharm (install)

<https://www.jetbrains.com/pycharm/>

# In pycharm open up a project or create a new project. When creating the project selection the interpreter to be in this location: (it should be in the drop down)

C:\Users\Joe\Anaconda3\envs\keras\python.exe

4.) Create a new python file in pycharm and put the following in it the new file.

# the file below is an example of how to run this in you new project

<https://keras.io/getting-started/sequential-model-guide/#getting-started-with-the-keras-sequential-model>

======================= paste below into a new <filename>.py in your project ================

import keras

from keras.models import Sequential

from keras.layers import Dense, Dropout, Activation

from keras.optimizers import SGD

# Generate dummy data

import numpy as np

x\_train = np.random.random((1000, 20))

y\_train = keras.utils.to\_categorical(np.random.randint(10, size=(1000, 1)), num\_classes=10)

x\_test = np.random.random((100, 20))

y\_test = keras.utils.to\_categorical(np.random.randint(10, size=(100, 1)), num\_classes=10)

model = Sequential()

# Dense(64) is a fully-connected layer with 64 hidden units.

# in the first layer, you must specify the expected input data shape:

# here, 20-dimensional vectors.

model.add(Dense(64, activation='relu', input\_dim=20))

model.add(Dropout(0.5))

model.add(Dense(64, activation='relu'))

model.add(Dropout(0.5))

model.add(Dense(10, activation='softmax'))

sgd = SGD(lr=0.01, decay=1e-6, momentum=0.9, nesterov=True)

model.compile(loss='categorical\_crossentropy',

optimizer=sgd,

metrics=['accuracy'])

model.fit(x\_train, y\_train,

epochs=20,

batch\_size=128)

score = model.evaluate(x\_test, y\_test, batch\_size=128)

===================== end of file ==================================

5.) run the file and your done!