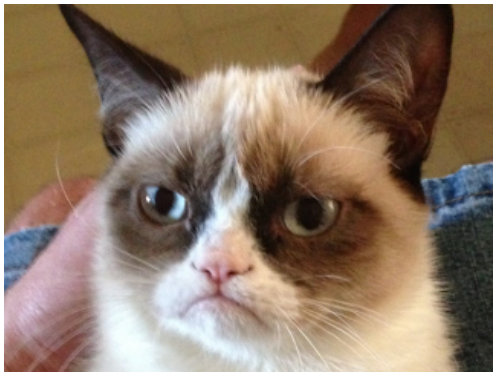
Project 4 : Smelly Cat

Due 5/1/2019 @ 12pm (noon)

TOPICS:

- Python/IPython
- Artificial Neural Networks
- TensorFlow
- IBM Watson and Cloud Computing
- Kaggle Competition



BACKGROUND:
During class, we discussed how to use and manipulate neural networks.

DIRECTIONS:
In this project, you will:

1) Run a neural network for classifying a set of images of handwritten numbers (see Chapter 12) for different numbers of hidden units ranging from 1 to 200. Plot the accuracy vs. number of hidden units at 100 epochs.
2) Use a Jupyter notebook prototype I will share via Google Drive to set up and run a neural network with TensorFlow. The accuracy as is about 88%. If it is not at least 90%, I will not grade this portion of your project. Note: You must figure out how to install prerequisite Python libraries (tensorflow, tqdm, opencv).
3) Participate in the IBM Watson and Cloud Computing Workshop.
4) Sign up to Kaggle.com and participate in one (1) competition and submit a screenshot showing that your participated. (Undergraduates optional, Graduates required,.)

IMPLEMENTATION NOTES:
Any program that does not execute completely without errors will not be graded.

COMMENTS AND STYLE:
Although there will be no formal policy on commenting and style, the reader should able to easily follow the main purpose of the code. Each set of code that does

something significant must be commented. The variable names should be easily recognizable and acronyms should be avoided if possible.

Do not be surprised if help is not forthcoming if your code is poorly commented and/or difficult to follow. You have been warned.

PROJECT SUBMISSION:
You will turn in the modified IPython notebooks.

The programs, graphs, and screenshots for parts (1), (3), and (4) should be in a single directory named "SmellyCat". The contents of the directories must be archived in a tarball that is gzipped called Proj4.tar.gz. For part (2), share a Google Drive Folder with me with the contents of your Jupyter notebook.

Place the gzipped tarball in your Drop Box on Sakai before it is due.

PLEDGED WORK POLICY:
Assignments in Computer Science courses may be specified as "pledged work" assignments by the professor of the course. When an assignment is specified as "pledged work" the only aid that the student may seek is from either the course professor or TAs (including CS Center tutors) that the professor has explicitly specified. On "pledged work" assignments the student may not use the services of a tutor.

You may discuss only **basic programming language syntax** and general computer science concepts with everyone else. Any other communications of the project (e.g., giving your code to someone else or seeing someone else's code) are strictly prohibited except with the professor and TAs of the course. Your code and your implementation of the project must be the product of your own work and that of your partner.