Introduction to Machine Learning - Lab 12
Using Deep Learning Algorithms with Tensorflow

Danna Gurari

Deep Learning Environments

1. **Your local machine**: You will need to configure all hardware and software settings.
2. **Pre-Configured Windows Machine**: We have a Microsoft Azure Machine called "Data Science Virtual Machine (DSVM)" on a "Windows Server 2016" you can use. In step 1, use a "HDD" VM disk type and remember the username and password you set. Deploying a system takes may take 5-10 minutes.
3. **Pre-Configured Linux Machine**: We have a Microsoft Azure Machine called "Data Science Virtual Machine for Linux (Ubuntu)" you can use. In step 1, use a "HDD" VM disk type and remember the username and password you set. Instantiate the machine in the Location "North Central US". Deploying a system takes may take 5-10 minutes.

Windows Machine: CNNs, RNNs

4. Launch Jupyter and navigate to the local web page hosting this environment
5. **CNN example**: create a new notebook with our code for running the ResNet system to predict which objects are in images. The code comes from the keras tutorials.
6. **LSTM example**: run the example code "TensorFlow/6_lstm.ipynb". This example and more are located at this link.
7. Explore the many more wonderful examples provided online, such as those at this link. For numerous tutorials, note that you must first download the data on the Azure machines; e.g., run CNTK_103A_MNIST_DataLoader.ipynb to download MNIST.

Linux Machine: Using Different Hardware, Autoencoders

8. **Autoencoder example**: create a new file to run Autoencoder code. The code comes from Brandon Dang at this link.
9. **Autoencoder example**: create a new file to compare the time on CPUs versus GPUs to train a CNN. The code comes from Brandon Dang at this link.