CSCI-E63 Final Project Summary
Tensorflow for Algorithmic Trading

Summary:
One of the hottest areas in finance these days is Algorithmic Trading, which uses artificial intelligence to sift through massive troves of data to identify signals that humans can't see. Algorithmic trading (automated trading, black-box trading, or simply algo-trading) is the process of using computers programmed to follow a defined set of instructions for placing a trade in order to generate profits at a speed and frequency that is impossible for a human trader. It uses natural-language processing to find keywords like company names, and measures when a story is rising up the media food chain, such as from blogs to newswires, to indicate that it may be important enough to act on. The goal of the project is to use sentiment analysis on news data to predict stock price.

Specific areas covered in the project:
- Retrieving data from an API
- Reading JSON files into Python Pandas Data Frame.
- Data analysis techniques to clean-up and prepare malformed data.
- Serializing and De-Serializing Python object structures using Pickle module.
- Python Natural Language Tool Kit (NLTK).
- Neural Network setup and Hyper-parameter tuning.
- Visualization

Problem Statement:
Create a Deep Neural Network that analyzes news feeds for a stock and makes price predictions based on the sentiment.

Current Setup and Future Work:
This project currently runs on static news articles from 2007-2016 made available by New York Times and makes predictions on the price of the Dow Jones Industrial Average (DJIA). The Jupyter Notebook downloads the data sets for you using an API call. The DJI open and close prices are used from a csv provided. Future work involves integrating a dynamic feed of news articles from multiple sources and parametrizing the stock to be analyzed with real time price information.

Results:
The predicted prices follow the known prices very closely. With a little more optimization in the network architecture, including using different optimizers or loss functions, it seems possible to tune this model to predict with market-worthy accuracy.

Detailed implementation for reference and future work:
 https://github.com/llSourcell/Stock_Market_Prediction

YouTube URL of 2 minute presentation: https://youtu.be/ZtwWGCC7z64

YouTube URL of full presentation: https://youtu.be/eGu36PADdzc