CSC431/331 Final Project

Choose one of the following projects:

1 Final Project Option 1

You want to built a natural gas storage facility. You want to buy and store gas when it is cheaper and sell it when the price increases.

Perform a study of historical natural gas prices in the US and using regression identify average seasonal price variations (winter-summer). Determine the cost per unit volume of gas below which building the storage facility is economically viable.

Assume you can plug you facility into the existing gas pipelines. Assume that there is an infinite supply of gas. Assume you can pump it at infinite speed. Assume your activities do not affect the supply nor the price of gas.

Produce plots of the historical prices and visualize your results. Discuss what happens if any of your assumptions is relaxed.

2 Final Project Option 2

Consider the trader program created in class. Modify if to include a few different strategies normally used in technical analysis (measure things like Bollinger bands, moving average, volume increase, and buy/sell based on those indicators). Choose 10 stocks over the same time periods (2006, 2010, 2014) and check how well those strategies that you implemented perform on each of those 10 stocks. Produce a table of your results.

3 Common requirements for both projects

- This is an individual assignment and they will be cross checked. I expect the code and the results to different from student to student. Plagiarism will be reported.
- Produce a 10 pages paper explaining the goal, the methodology, the code, and the result.

- Describe the algorithms you use, how they work, and why they are applicable
- Assume a target audience of somebody with a technical background who has not taken this class.
- Include at least 4 plots (excel plots are NOT acceptable).
- Include an appendix with your code in 10pt font.
- Code can be written in any language but must be indented and each function must be documented (what is it for? what is the input? what is the output?). No need to document code inside functions.
- All the numbers and the plots in the paper must be reproducible by running the code.
- The paper must be in PDF. (DOC, DOCX, PAGES, etc ARE NOT ALLOWED).
- It is OK and it is encouraged that you discuss these specifications and your strategies on the mailing list.
- The deadline is Friday March 13 but if you want early feedback I encourage an earlier (non-definitive) submission. You will be able to review your project until the final deadline.