MF815 Final Project

The final project is an extension to the midterm project. Form a small group of 2-3 people, share and discuss your results and do the following.

Tasks:

1. Compare and contrast the models you used in the midterm project
2. Discuss the motivation of model selection in the group. Think about questions such as
   1. In what situation you believe the model should work better than other models, why?
   2. In what situation you believe the model would do worse than other models, why?
3. Do your empirical results support your prior expectations?
   1. If so, demonstrate the supporting evidence
   2. If not, discuss why and does it justify the reason to switch to another model?
4. If you have selected a number of features in your midterm project, use the features you selected. If not, do the principle component analysis of all the features and select the first few principle components. Either use your selected features or principle components, combine with any outlier detection method we introduce in class to find some outlier companies.
   1. Are there any outlier companies that your best model gives wrong predictions? Conduct case study on at least two outliers and discuss why the model doesn't work.
   2. What if you remove the top x% of outliers from your model, does your model fit better?

Report:

1. Submit a research report as if you are a consultant team presenting your results to the company who hire your team to do the analytic works.

2. Document your discussion from tasks above and summary them into a final report. Sample format of report can be the following

- Executive Summary
- Select 3 models that used in the team for the midterm project. Compare them and incorporate results of your discussions in Task 1-3.
- Report your finding in Task 4.
- Appendix

Be succinct and concise on your write-up. Keep the main document within 8 pages and leave all the details in Appendix (no limit on Appendix), but ensure you segment the Appendix into separate sections and refer to the corresponding sections in Appendix from the main document.

Grading criteria:
Quality of the write up, discussion of model comparison, the rigorousness of outlier detection and updated models. All team members will get the same grade on the final project.

Midterm project and the final project determine 50% of the final grade. The weight on the midterm project is adjusted to 30% and the final project is adjusted to 20%. The remaining 50% of the final grade is still determined by the homework.