

## Data 621: Business Analytics and Data Mining

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### Topic: Forecast Stock Market Returns

**Team:** Ramnivas Singh, Deepak Sharma

**Summary:** Final Project proposal is to analyze and forecast financial tickers/stocks returns based on the historical end of trading day data on Dow Jones industrial average and SP500. We will design and develop a model for the financial data, the daily historical stock prices (open, high, low, close and adjusted prices) will be used for models.

This historical data points will be extracted and prepared to predict future values for a selected variable of the dataset. In this project approach we will focus on quantitative forecasting involving our variable to forecast (close price), statistical principal's analysis and advanced concepts applied to a given historical data.

### Topic: Forecast Financial Tickers/Stocks

We will explore modeling techniques such as linear, binomial, and panel modeling, and modeling techniques outside of the course scope, such as time series forecasting using autoregressive modeling. The goal will be to predict the outcome of stock prices in either absolute returns or positive/negative closings depending on the selected model.

Key theme of this proposal is to:

- a. Time series data
- b. Panel regression
- c. Logistic regression
- d. Auto-regressive models
- e. Model performance & Predictions
- f. Decision Tree

### Data Sources

- a. Yahoo Finance
- b. Data set hosted on Kaggle, shows that for the given 30 publicly traded companies, there are approximately 36,000 observations.

Data acquisition will be done via available API's or web scraping. This data will be analyzed by using visualization and regression methodologies.

Available time series data will be rendered and plotted to conclude portfolio performance along with the predictions.

### Deliverables

- This solution will be available as an R-Markdown file and pdf extract
- Data set from kaggle, Yahoo Finance
- Source code for data models and hypothesis test