Our project revolves around selling out of the money options, ideally in times of high volatility against a trend. We will use predictions created from option volume trends and bollinger charts, to create signals on the write time to sell options. Fundamentally we will be testing the margin of error in our predictive methods against the margin of error inherently allowed by selling an option that is out of the money.

**Read and Prepare data**

* Slice data to contain only select stocks
  + Create perimeters for good stocks to trade
    - Groupby ticker [volume].mean :100
* Create Delta Columns
  + Delta between expiration date and current data date
  + Delta between underlying price and strike price
  + Delta between price from two weeks ago, 1 week ago, 1 month ago
* Create forward looking column of price on expiration
* Create volume per call/ per put, percentage share

**Create Prediction Data and Signals**

* From volume percentage data
  + Find outliers in amount
  + Find outliers in percentage share
* From News Data
  + Find outliers
* For overreaction to negative news
  + Find periods of time where news data=negative and price drops
  + Measure the time it drops
  + Create signal that it won't drop any further

**Backtest strategy**

* From signals to enter/exit, simulate 3 different strategies
  + Selling options with low premium ~.06% premium, ~5% out of the money
  + Selling options with medium premium - ~.1% premium,
  + Selling options for high premium, at the money
  + Append profit/loss to a list

**Problems and Challenges**

* Calculating collateral required/ mitigating losses with spreads
* Only having option data on closing time
  + If our exit signal comes during a day, most likely we will assume all the pain from that day
* Running monte carlo to figure out which configuration is best
* Creating a function that selects certain

**Possible Alternatives**

* If historical news data is hard to find, run a classification machine learning to determine fanfare on certain stocks based on rally length- TSLA has a lot of fanfare, its rallys last weeks whereas PFE has little fanfare, its rally is over in a few hours
  + Based off different classification determine rally length
  + Determine to sell rallying side at top, or other side in the beginning