**Broad Objective:**

To predict short term (intraday) price movement of various stocks on the basis of its price and combination of multiple features provided.

**Data:**

We have provided historical 5-min tick data for a universe of more than 150 stocks. The data has the following features:

Mid\_Price: The price over which the returns need to be calculated

Date and Time

46 anonymized features

**Methodology**:

* The algorithm will decide whether to take a position in a stock (buy/sell)
* Returns calculated will be calculated as

1. If there is no current position in any stocks at any point, the algorithm can either buy a stocks or sell n stocks; If the stock is bough it’s called a long position, and if the stock is sold its called a short position
2. If there is a long position, the algo can only square-off the position: It means it will sell the current long position and become position neutral.
3. If there is a short position, the algo can only square-off the position: It means it will buy the current short position and become position neutral.
4. At 3:15 PM every day the algo mandatorily should square-off any open position.
5. Return should be calculated only when the positions are square-off: If the position was long the return calculated will be equal to ((exit price- entryprice)/entryprice)
6. If the position was short the return calculated will be equal to ((entryprice -exit price)/entryprice)
7. For any new entry with exit the “number of trades” will be equal to 1; for example if one enters underlying4 at 1:00 PM and exits at 3:15 PM, number of the trade for that day for that particular stock will be 1.

Since all the price prediction needs to be done intraday, all the positions can get opened after (9:30 AM) and should exit at or before (3:15 PM)

**Output:**

It should have the following information

1. Stocks wise daily return (daily return(a)): Return for any day for any stock : sum of all trades return for that day: For example : for underlying 7 : the algo enters long at 1:20 PM and square-off the position at 2:40 PM: and again goes short 2:45 and square-off at 3:15. The return for that day will be the return of two trades taken that day.
2. Stocks wise number of daily trades (trades(b)) : Trades for any day for any stock : sum of all trades for that day. For example: the trades will be equal to 2, as in the above-mentioned example.

**Detailed Objective**:

1. The final optimisation problem would be to maximise of ( (a)-(0.12%)\*(b)) \*(b), this will be the criterion for selecting the price predicting algos
2. However, there must be a minimum of 20 trades per stocks; averaged across stock.