



**Ahmedabad
University**

CSE523: Machine Learning

Weekly Report-2

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**Group No.4
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As mentioned in the previous reports we worked on the data exploration part. As the data is related to finance we are having a hard time grasping the concepts and the name used fully. We started by working on the mathematical representation of the data. It is mentioned below. We tried to reconstruct the data in the original form and tried to understand how the data was calculated. We looked at the weighted average price and how it is calculated in the data.

Order Books : This is a list of buy and sell orders of a stock. It lists the number of shares bid on or asked on. In the case of stock valuation, weighted average price (WAP) to determine the stock valuation at any given instant of time.

$$WAP = \frac{BidPrice_1 * AskSize_1 + AskPrice_1 * BidSize_1}{BidSize_1 + AskSize_1}$$

Log Returns : Plotting raw returns on a stock after selling it is noisy than plotting log returns. The plotting of log returns will smoothen the graph.

Raw return = (Selling price - Buying price) / Buying price

Log return

$$r_{t_1, t_2} = \log\left(\frac{S_{t_2}}{S_{t_1}}\right)$$

Where S_{t_i} is the price of the stock S at any time t

Realized volatility

$$\sigma = \sqrt{\sum_t r_{t-1, t}^2}$$

The realized volatility , σ , is the squared root of sum of squared log returns. Realized volatility is the actual change that occurs in the historical price of a stock. The realized volatility is the standard deviation of returns on a stock from its mean and it will be different when computed for different time intervals. Basically volatility is a statistical measure of the dispersions of return for a given security or market index. For example if the stock market rises and falls more than one percent over a sustained period of time it is called a ‘volatile market’. It refers to the amount of uncertainty or risk related to the size of changes in a security’s value. Higher volatility means the value of a security may be spread out over a wider range of values. This means that the price of a security can change dramatically in either direction within a short period of time. Lower volatility means a security's value does not fluctuate significantly and tends to be more stable.

Work for Next week:

Continuing with the data exploration and moving forward to visual representation of data.
Problems faced: In data we are moving very slowly with the exploration part as the terminologies used are of Finance background and technical know how's of the stock market.
Other than that we have no problems as of now