DELHI TECHNOLOGICAL UNIVERSITY

MC -205 Project

Stock Prediction

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Abstract

Stock market prediction is **the act of trying to determine the future value of a company stock** or other financial instrument traded on an exchange. The successful prediction of a stock's future price could yield significant profit. So **here we take data of past 3 years to predict the stock, by taking data from Yahoo Finance. Our project based on closing price data; we plot graph between %change with their probability that help us to predict that**
“Is this stock profitable?”.

Introduction:

The stock market is known as a place where people can make a fortune if they can crack the *mantra* to successfully predict stock prices. Though it's impossible to predict a stock price correctly most the time. So, the question arises, if humans can estimate and consider all factors to predict a movement or a future value of a stock, why can't machines? Or, rephrasing, how can we make machines predict the value for a stock? Scientists, analysts, and researchers all over the world have been trying to devise a way to answer these questions for a long time now.

The Whole Idea

Basically, Stocks can be predicted by 2 ways

1. Technical Analysis

   The analysis which is made by observing the price pattern followed by company in a specific period.

2. Fundamental Analysis

   The Analysis which is made by observing financial statements of the company like statement of profit and loss, balance sheet, cash flows etc.

   Here we use Technical Analysis to predict our stock, because

   "History Repeats itself ".

Methodology

Predicting Stock Price movement statistically. Here we use historical data to predict the movement of stock price for next day. It is completely mathematically valid. The mathematical model of Brownian motion has several real-world applications. Stock market fluctuations are often cited, although Benoit Mandelbrot rejected its applicability to stock price movements in part because these are discontinuous. This is a momentum indicator used in technical analysis, which compares the stock's closing price to its price over the course of a particular time frame. During an upward trend in the market, a stock's share price will close near its high (highest price traded), and when in a downward-trending market, the security's price will close near the low (lowest price traded). This may determine whether a stock is overbought or oversold, thus predicting a possible momentum change

Modelling

Stock Name – Apple

3 years data (998 data)

1/11/2016 – 19/10/2020

Open Price – Price at which stock opened that day

Close price – Price at which stock closed that day

We make our project based on closing pricing

% change – At what percentage stock price changed by previous day price.

Then we arrange our %change in ascending order and give them a serial no.

Probability formula used –

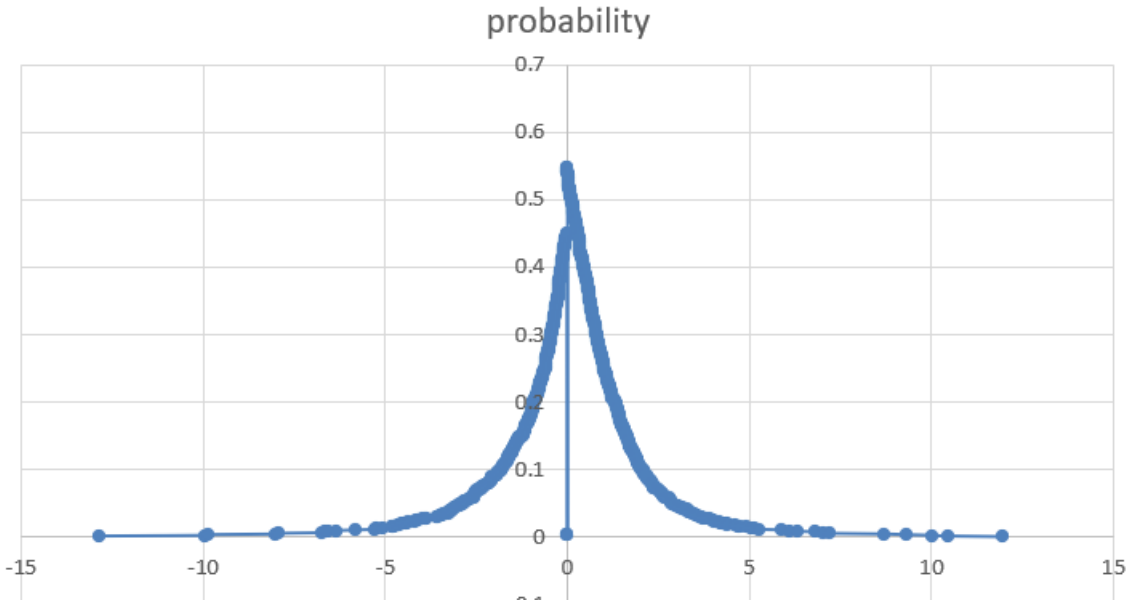
For Loss - (Serial no)/998

For No loss and no profit (0 % change) – (Total Zero observation)/998

For profit - 1- (Serial no)/998

Date	Open	Close	S.no	% change	%change	probability
		27.5				
01-11-201	28.365	27.8725	1	1.354542	-12.8647	0.001002
02-11-201	27.85	27.8975	2	0.089694	-9.96074	0.002004
03-11-201	27.745	27.4575	3	-1.5772	-9.87547	0.003006
04-11-201	27.1325	27.21	4	-0.9014	-8.00609	0.004008
07-11-201	27.52	27.6025	5	1.442492	-7.90921	0.00501
08-11-201	27.5775	27.765	6	0.588708	-6.7295	0.006012
09-11-201	27.47	27.72	7	-0.16207	-6.63307	0.007014
10-11-201	27.7725	26.9475	8	-2.78679	-6.53682	0.008016
11-11-201	26.78	27.1075	9	0.593747	-6.34856	0.009018
14-11-201	26.9275	26.4275	10	-2.50853	-5.81194	0.01002
15-11-201	26.6425	26.7775	11	1.324378	-5.2617	0.011022
16-11-201	26.675	27.4975	12	2.688821	-5.23478	0.012024
17-11-201	27.4525	27.4875	13	-0.03637	-5.03741	0.013026
18-11-201	27.43	27.515	14	0.100045	-4.80104	0.014028
21-11-201	27.53	27.9325	15	1.517361	-4.77779	0.01503
22-11-201	27.9875	27.95	16	0.062651	-4.75004	0.016032
23-11-201	27.84	27.8075	17	-0.50984	-4.63261	0.017034
25-11-201	27.7825	27.9475	18	0.503458	-4.62205	0.018036
28-11-201	27.8575	27.8925	19	-0.1968	-4.55164	0.019038
29-11-201	27.695	27.865	20	-0.09859	-4.43387	0.02004
30-11-201	27.9	27.63	21	-0.84336	-4.39888	0.021042
01-12-201	27.5925	27.3725	22	-0.93196	-4.33902	0.022044
02-12-201	27.2925	27.475	23	0.374467	-4.19461	0.023046
05-12-201	27.5	27.2775	24	-0.71884	-4.14023	0.024048
06-12-201	27.375	27.4875	25	0.769862	-4.09722	0.02505
07-12-201	27.315	27.7575	26	0.982268	-3.96321	0.026052
08-12-201	27.715	28.03	27	0.98172	-3.88956	0.027054
09-12-201	28.0775	28.4875	28	1.632173	-3.87767	0.028056
12-12-201	28.3225	28.325	29	-0.57042	-3.5657	0.029058

Result



This graph shows the plot between %change with it's corresponding probability.

Observation

As we can see in this graph that probability that this stock make investors loss is < 0.5 and make profit is >0.5 , By stock prediction we can say that this stock is profitable .

	1.996996	0.10521	2
	4.908558	0.014028	5
Probablity that stock will lies between			
	2 and	5	0.091182

Instead of stock prediction we can also find the probability to give 2 % to 5 % profit or

probability to give up to 5% profit or

probability to give 2% loss

and many more

Reference

- https://youtu.be/ZcQLhEcEB1A
- https://academic.oup.com/comjnl/advance-article-abstract/doi/10.1093/comjnl/bxab008/6317640?redirectedFrom=fulltext
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