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Stock Prediction: A Review

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Abstract: ***The motive behind this paper is to build a model to predict financial market's movements. Thisprediction method aims to foresee whether tomorrow's exchange closing price is going to be lower or higher with respect to today. Further, step will be to develop a trading strategy on top of that, based on our predictions, and backtest it against a pre-defined benchmark. Linear regression is a statistical model that examines the linear relationship between two (Simple Linear Regression) or more (Multiple Linear Regression) variables—a dependent variable and independent variable(s).***

Keywords: ***Stocks, Python, Profit, Linear Regression, Prediction.***

I. INTRODUCTION

Predicting the Stock Market has been the bane and goal of investors since its existence. Everyday billions of dollars are traded on the exchange, and behind each dollar is an investor hoping to profit in one way or another. Entire companies rise and fall daily based on the behaviour of the market. Should an investor be able to accurately predict market movements, it offers a tantalizing promises of wealth and influence. No wonder then that the Stock Market and its associated challenges find their way into the public imagination every time it misbehaves. The 2008 financial crisis was no different, as evidenced by the flood of films and document aries based on the crash. [8] If there was a common theme among those productions, it was that few people knew how the market worked or reacted. Perhaps a better understanding of stock market prediction might help in the case of similar events in the future.

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. The efficient-market hypothesis suggests that stock prices reflect all currently available information and any price changes that are not based on newly revealed information thus are inherently unpredictable. [4]

There are many algorithms to compute the prediction of stock. We have chosen linear regression.

Linear Regression is a linear approach for modelling the relationship between a scalar dependent variable *y* and one or more explanatory variables (or independent variables) denoted *X*. The case of one explanatory variable is called simple linear regression. For more than one explanatory variable, the process is called multiple linear regression.

II. OBJECTIVE

This paper aims to build a back end infrastructure for a program used for predicting stock prices for better choices for investors. Also, to provide an idea to the investors for their maximum profit. So that they don't have to face huge loses in the market.

The below listed points depict our objective:-

- To formrobust methodology for prediction.
- To provide a commencement point for all the investing enthusiasts.
- To diminish the chances of any risks.
- To provide a foundation and base for other algorithms.
- To make sure that people think and invest before losing out crores of money.

By implementing theabove listed objectives, we would be able to form the logic freely.Which would eventually result in enjoying good rapport with people, ability to communicate at all levels, ability to recruit experts and highly enthusiastic staff, reduced boundations from the Govt.[6]

With a little help from the papers referred and more from our knowledge, this paper will be able to encourage algorithm formation and will help in formulating a final code.

III. REQUIREMENTS

There are a few pre-requisites that you need to possess to use any kind of conclusion drawn from this paper. The same are listed below as follows.

A. Hardware Requirements:

CPU Speed: 2GHz recommended or higher

Processor : Pentium Processor or above

Memory/RAM: 1GB minimum, 2GB recommended or higher

Display Properties: Greater than 256 color depth

Size of Hard Disk: 60 GB minimum

NIC Card

B. Software Requirements:

Software Used: Sublime text, python software

Operating System: Microsoft Windows XP, Vista, 7 or higher.

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Sublime text: Sublime Text is a proprietary cross-platform source code editor with a Python application programming interface (API). It natively supports many programming languages and markup languages, and functions can be added by users with plugins, typically community-built and maintained under free-software licenses.

Features:

The following is a list of features of Sublime Text:[3]

- "Goto Anything," quick navigation to files, symbols, or lines
- "Command palette" uses adaptive matching for quick keyboard invocation of arbitrary commands
- Simultaneous editing: simultaneously make the same interactive changes to multiple selected areas
- Python-based plugin API
- Project-specific preferences
- Extensive customizability via JSON settings files, including project-specific and platform-specific settings
- Cross platform (Windows, macOS, and Linux)
- Compatible with many language grammars from TextMate

IV. CODE AND OUTPUT

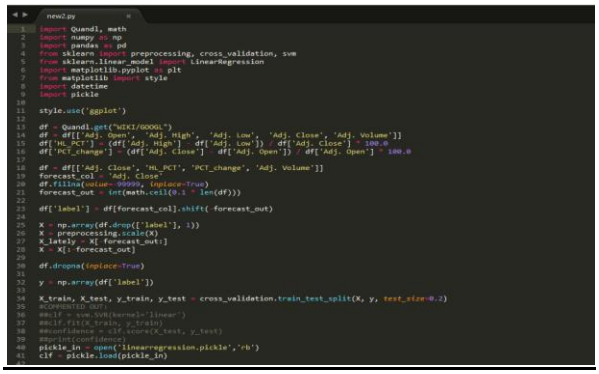

Fig 1. Code Screenshot

Fig 2. Code Screenshot

Fig 3. Output

```
[26, 25, 24, 23, 22, 19, 18, 17, 16, 12, 11, 10, 9, 8, 5, 4, 3, 2, 1]
[708.58, 700.01, 688.92, 701.45, 707.45, 695.03, 710.0, 699.0, 692.98, 690.26,
675.0, 686.86, 672.32, 667.85, 703.87, 722.81, 770.22, 784.5, 750.46]


The stock open price for 29th Feb is: $ 680.925520298
The regression coefficient is  -1.65535514798 , and the constant is  728.930819
59
the relationship equation between dates and prices is: price =  -1.65535514798
 * date +  728.93081959
[Finished in 6.2s]
```

Fig 4.Output

V. LANGUAGE USED

Python is an ObjectOriented language that does all the things that you can do with Perl or TCL - only better, since it was designed from the ground up as an OO language. Lots of Python documentation is available at http://www.python.org and the Python Wiki http://www.python.org/cgi-bin/moinmoin as well as source code and binaries for UNIX, Macintosh, Win95/NT, DOS, etc.

- Python is a widely used high-level programming language for general-purpose programming, created by Guido van Rossum and first released in 1991.[2]
- Python features a dynamic type system and automatic memory management. It supports multiple programming paradigms, including object-oriented, imperative, functional and procedural, and has a large and comprehensive standard library. \
- Python is a multi-paradigm programming language. Object-oriented programming and structured programming are fully supported, and many of its features support functional programming and aspect-oriented programming (including by meta-programming and Meta-objects (magic methods). Many other paradigms are supported via extensions, including design by contract and logic programming.[7]

- Python uses dynamic typing, and a combination of reference counting and a cycle-detecting garbage collector for memory management. It also features dynamic name resolution(late binding), which binds method and variable names during program execution.[10]

VI. FUTURE SCOPE

The scope for improvement in any project is inevitable. The future prospects of our project can be better if a few more points are considered and implemented successfully. These points are listed below:

- The prediction can be more accurate.
- More data inputs can be assigned.
- Flexibility according to contemporary needs can be enhanced.

VII. CONCLUSION

The forming of this paper was a learning curve for us in a great manner. The different aspects of stocks prediction and market happenings were a vast collection of sub-topics to study. Scope of improvements and development are inevitable, so many factors exist which can be improved and a further deeper look-in would definitely furnish the paper. All the future scopes are in the process of being implemented according to its feasibility on both time and cost aspects. Hopefully this paper can one day actually be useful in real life stock markets, coming away from the mock zone. If continuous improvements in all these algorithms occur in the right direction circumstances would definitely be secure in the future.

We hence conclude by thanking our teachers for helping and guiding us through in creating this project, we are grateful for their kind lessons and guidance.

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