

# **STOCK ANALYSIS USING PYTHON**

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**BACHELOR OF ENGINEERING  
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# INTRODUCTION

Python is quite essential to understand data structures, data analysis, dealing with financial data, and for generating trading signals.

We all are aware of how Stock Market functions. A stock is the small chunk of ownership in the company. The stock price of the company reflects the net evaluation of the company and also gives a little insight into its performance. These stocks are traded on exchanges and their prices are constantly changing due to their demand and supply in the market. If a stock is in high demand and low in supply i.e. more people want to buy it and fewer people are willing to sell it then the price for the stock will go up and similarly if the stock is in low demand and high on supply which means people more people are ready to sell it but fewer people are willing to buy it then its prices go down.

The sudden increase in the demand for the stock can be due to various reasons including positive news about the company or an announcement from the company. After a period of time when the demand for the stock vanishes its prices slowly creep down as the investor loses interest in it. These stock prices going up and down is an iterative process and repeated. This volatility of stock makes investors nervous while investing in a company. So to understand the risk associated with it there must be a proper analysis of stock before buying it.

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# FEASIBILITY STUDY

There are so many factors involved in the prediction of stock market performance hence it becomes one of the most difficult things to do especially when high accuracy is required. Here data science & its techniques have been used to search patterns and insights that were not approachable before. Learning Python- object-oriented programming, data manipulation, data modeling, and visualization is a ton of help for the same.

Stocker is a Python class-based tool used for stock prediction and analysis. Stocker is designed to be very easy to handle. Even the beginners in python find it that way. It is one of the examples of how we are using python for stock market and how it can be used to handle stock market-related adventures.

## Significance

I have recently combined my interest in learning Python and its applications in data visualization with analyzing stocks for investment purposes. Investing in the stock market is one way of generating passive income. Research is essential when deciding to select the best stocks, especially if the goal is to find a good value investment to buy and hold.

One aspect of investing is performing fundamental or technical analysis of a stocks performance to determine good value before including in your portfolio. I decided to analyze the performance over the last five years of four of the major tech stocks Amazon, Microsoft, Tesla and Apple using Python.

## Support Vector Regression (SVR)

Support Vector Regression (SVR) is a kind of Support Vector Machine(SVM) It is a supervised learning algorithm which analyzes data for regression analysis. This was invented in 1996 by Christopher Burges et al. The cost function for building a model with SVR ignores training data close to the prediction model, so the model produced depends on only a subset of the training data.

SVMs are effective in high-dimensional spaces, with clear margin of separation and where the number of samples is less than the number of dimensions. However, they don't perform so well with large or noisy datasets.

## Linear Regression

Linear Regression linearly models the relationship between a dependent variable and one or more independent variables. This is simple to implement and is used for predicting numeric values. But this is prone to overfitting and can't be used where there's a non-linear relationship between dependent and independent variables.

# METHODOLOGY

## Why Choose Python for Your Project

The worldwide spending on the IoT indicate that it is a new stage in the development of technologies that will completely change our lives and affect both the consumer and industrial segments.

## Starting with Stocker

The first thing that should be done is importing the Stocker class into the current python session after installing the required libraries. You can use it to create an object. The constructed object will contain all the properties of the Stocker class. As the stocker is built on Quandl WIKI database hence it allows access to 3000 and more US stocks.

Python classes are comprised of – attributes and methods. Amongst all the attributes of the class, one of it is stock data for a specific company.

The benefits of using the Python class include – the functions and the data it acts on are associated with the same object. The entire history of the stock can be plotted by using the method of the Stocker object. The ‘plot\_stock’ function has a number of arguments that are optional and by default, it plots the adjusted closing price for the entire date range that can also be customized according to our needs (range, stats to be plotted, type of plot). Using ‘plot(stock)’ we can investigate any number of quantities in the data present in any data range and also suggest real-world correlations.

## Machine Learning and IoT (Internet of Things)

Recently Internet of Things(IoT) is growing rapidly, various applications came out from academia and industry. Machine learning can also help machines, millions of machines, get together to understand what people want from the data made by human beings. Also machine learning plays an essential role in IoT aspect for handle the huge amount of data generated by those machine. Machine learning gives IoT and those machines a brain to think, which is called "embedded intelligence" by some scholars.

## Programmers use Linux

Tell me that you are a programmer without telling that you are one? My answer is “I use Linux!”

Linux is different from other operating systems in many important ways. First, and perhaps most importantly, Linux is open source software. The code used to create Linux is free and available to the public to view, edit, and—for users with the appropriate skills—to contribute to. You probably already use Linux, whether you know it or not. Depending on which user survey you look at, between one- and two-thirds of the web pages on the Internet are generated by servers running Linux.

## **MODULE & TEAM MEMBER WISE DISTRIBUTION OF WORK**

<b>Planning</b>	<b>Designing</b>	<b>Building</b>	<b>Coding</b>	<b>Testing</b>	<b>Deployment</b>
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## **SOFTWARE AND HARDWARE REQUIREMENTS**

### **Software:**

1. Operating System : Windows
2. Programming language : Python

### **Hardware:**

1. Laptop or PC:- minimum requirements mentioned below
  - i5 processor INTEL/AMD(equivalent)
  - Windows 8 or 10
  - RAM:- 4GB with integrated graphic card (necessary)

## **BIBLOGRAPHY**

- Wikipedia
- Tutorials Point
- opensource.com
- Techopedia
- Science Direct