Financial Market Prediction Using Machine Learning

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Abstract

Stock Price Prediction using machine learning advancements have begun to include such approaches in analyzing stock market data. The Opening Value of the stock, the Highest and Lowest values of that stock on the same day, as well as the Closing Value at the end of the day are all indicated for each date. In the era of big data, deep learning for predicting stock market prices and trends has become even more popular than before. The proposed solution is comprehensive as it includes pre-processing of the stock market dataset, utilization of multiple feature engineering techniques, combined with a customized deep learning based system for stock market price trend prediction.

Introduction

In the ever-evolving landscape of global finance, the ability to predict the movements of financial markets holds immense importance. Financial market prediction serves as a critical tool for a multitude of stakeholders, including investors, institutions, policymakers, and researchers. The significance of this endeavor lies in its potential to inform and guide decisions that have far-reaching economic and societal consequences.

At its core, financial market prediction entails the analysis of historical data, economic indicators, and a myriad of influencing factors to anticipate future trends and price movements across various asset classes, such as stocks, bonds, currencies, and commodities.

Objective

- **Stock analysts try to find out activity of an instrument/sector/market in future.**
- **The main aim of this financial market prediction project is to enhance the accuracy and effectiveness of forecasting financial market movements. It aims to provide valuable insights and tools to help investors, institutions, and policymakers make informed decisions, manage risks, and optimize their investment strategies in the ever-changing world of finance**

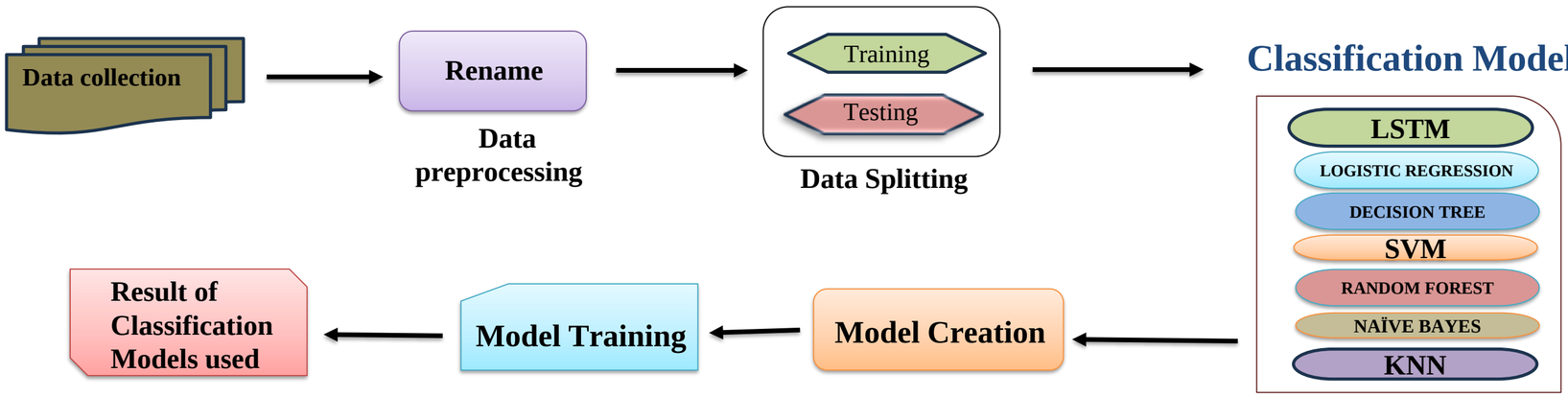
Dataset Description

	Source.Name	Date	Open	High	Low	Close	Adj Close	Volume
0	Adanient	01-01-2016	45.553741	49.422543	44.872616	49.095600	47.614208	10963906.0
1	Adanient	04-01-2016	48.768858	50.158157	45.907928	46.371094	44.971912	9408965.0
2	Adanient	05-01-2016	46.670792	48.823151	45.880684	48.278248	46.821522	9801814.0
3	Adanient	06-01-2016	47.951309	48.468964	46.480076	46.997730	45.579639	7093448.0
4	Adanient	07-01-2016	46.262115	46.262115	42.502296	43.564854	42.250347	8919023.0
...	...	...	...	...	...	...	...	...
7099	Samsung	19-09-2022	56300.000000	57000.000000	56000.000000	56400.000000	56400.000000	12278653.0
7100	Samsung	20-09-2022	56400.000000	57000.000000	55800.000000	55800.000000	55800.000000	14041465.0
7101	Samsung	21-09-2022	55400.000000	55500.000000	55000.000000	55300.000000	55300.000000	11863700.0
7102	Samsung	22-09-2022	54600.000000	54700.000000	54300.000000	54400.000000	54400.000000	12786510.0
7103	Samsung	23-09-2022	54400.000000	54900.000000	54200.000000	54500.000000	54500.000000	10555964.0

7104 rows × 8 columns

Dataset Name : Stock market prediction
Source of Data: Kaggle
No of rows – 7104
No of columns - 8

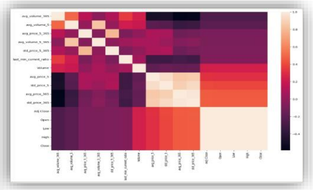
Methodology



Results

Fig:1

Fig:12



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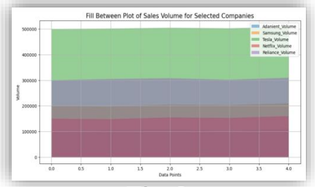

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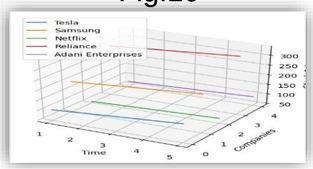

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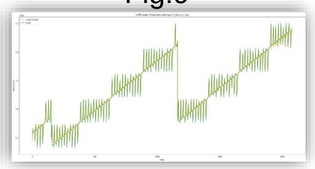

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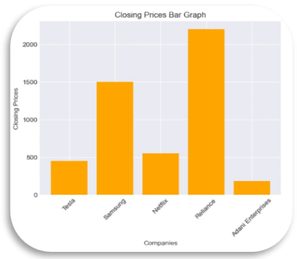


Fig:2

Fig:3

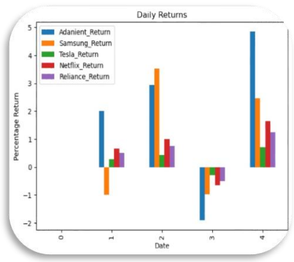


Fig:4

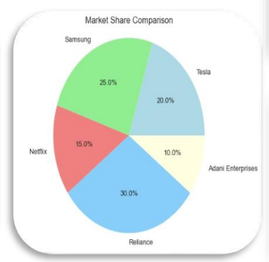
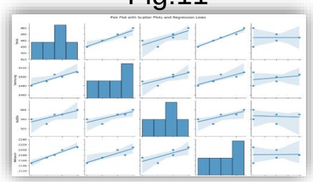


Fig:5



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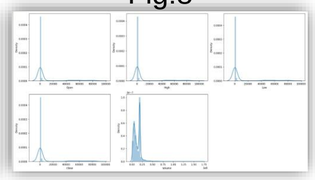

Fig:7

Future Scope

- **It helps you discover the future value of company stock and other financial assets traded on an exchange.**
- **The entire idea of predicting stock prices is to gain significant profits.**
- **Predicting how the stock market will perform is a hard task to do.**

Conclusion

As we conclude this project, it is evident that the road to precise market predictions is a continuous one, marked by evolving methodologies, ever-expanding datasets, and the integration of cutting-edge technologies. While we have made significant strides in understanding and improving prediction accuracy, we acknowledge that further research and development are essential for staying ahead in an increasingly dynamic financial environment.

Reference

[1] Derrick Mwiti, Data and Notebook for the Stock Price Prediction Tutorial(2018), Github.
[2] Haiqin Yang, Laiwan Chan and Irwin King, "Support Vector Machine Regression for Volatile Stock Market Prediction". Link:https://ieeexplore.ieee.org/abstract/document/9404733/references#references