Project Proposal

Stock Market Analysis

Abstract

Provide software-built tools to assist in making better analysis of stocks and their behavior

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DSC680 Project1, Milestone1

Topic

This project proposes to use data science to build a toolset that a financial advisory company can use to consult their customers and manage funds with more accuracy.

Business Problem

The stock market or the price of individual stocks is traditionally based on some fundamentals that an investor or investment advisor evaluates to make a judgment as to whether to invest in those stocks. In today's world, the fundamentals are not enough. Market behavior is affected by other factor such as geopolitical events, natural disasters, and the like. This is a challenge to the investors and their consultants.

Datasets

The data that we will use in this project will be the historical data for individual stocks. We will have a set of static data that we can use initially, and then connect our application to yahoo fiancé to get "live" data. The static dataset was obtained from Kaggle.

Methods

We will use Python as the primary programming language. We will use Matplotlib, Seaborn, Keras, Pandas, yfinance and other necessary libraries. We will have tools to show technical indicators for individual stocks as week as use Neural networks to predict the price of a given stock. We will also show graphs and provide metrics for the predictions to assist in risk assessment.

Ethical Considerations

These are the ethical considerations that are found common in customer-consultant relationships.

Data privacy: Ensuring that the data collected is obtained in a legal and ethical manner and that personal information is not misused or disclosed without consent.

Bias and fairness: Ensuring that the algorithms and models used in the project do not perpetuate or amplify biases and discrimination against any group.

Transparency: Ensuring that the data sources, analysis methods, and findings are transparent and easily understandable to all stakeholders.

Security: Ensuring that the data is secure and protected against unauthorized access or theft.

Informed consent: Ensuring that individuals whose data is being used in the project are fully informed about the project's purpose, risks, and benefits and have given their informed consent to participate.

Impact on society: Ensuring that the project's results do not have a negative impact on society or vulnerable populations.

Challenges/Issues

Challenges and issues that we could face in this project must be considered and addressed. This is part of risk assessment that all projects must go through. The table below lists the risks and their mitigation.

Risk	Mitigation
Data Quality	Ensure data quality by performing a preliminary analysis
Data Security	Ensure data is secure both incoming and outgoing. Enable/utilize security measures.
Data Availability	Ensure data is available without interruption or delay that may affect the performance of the analysis
Technical Challenges	Enforce fault tolerance, redundancy, connection integrity
Ethical Violations	Ensure procedures are put in place that will reduce and remove risk of ethical violations by all parties involved.

References

1. https://www.investopedia.com/top-7-technical-analysis-tools-4773275
2. François Chollet. Deep Learning with Python (Kindle Locations 1504-1508). Manning Publications Co.. Kindle Edition.