Sardar Patel Institute of Technology
Department of Computer Engineering
Academic Year 2020-21

Customer Adaptive Automated Trading System With Capital Risk Analysis Using Machine Learning

Harsh Agarwal, Bhavya Ahir, Aditi Kandoi, B.E.(Comp.)
Dr. Sudhir Dhage

Abstract

Prediction and analysis of stock market to forecast the stock prices within a time period is one of the most researched topics across the world. While the existing systems try to exploit the patterns of stock prices using historical data, they do not provide user based trading strategies. Moreover, dealing with high frequency data provides poor performance of the system. This project explores Machine Learning and Filter approaches to predict stock prices and performs risk analysis to suggest trading strategies to users. In this way, the solution provides a user friendly and a customer adaptive system.

Introduction

Stock market provides a platform for people to buy and sell shares for profit. However, stock market is highly volatile and no human can rightly predict the direction of stock market, which may lead to high losses for investors. The paper proposes a system which removes the limitations of the existing systems with the help of different machine learning modules.

Objective(s)

To develop a client-adaptive automated stock trading system that uses filters in the initial stage to narrow down scope of the stocks, Predicts stocks prices, performing risk analysis and recommends different trading strategies to the user to select on the basis of the risk score.

Problem Definition

The limitations by traditional trading has restricted the stock market penetration to less than five percent of the population. The mere removal of these limitations by the existing automated systems often result in giving rise to additional problems like computation power, inaccurate performance, etc.

Contribution

The proposed solution aims at removing the limitations of existing systems by introducing a filtering module which removes all the redundant data from the large data that is used for trading. The system is automated and requires minimal input from the user thereby making it convenient to use. The system also takes into account requirements of different users and recommends strategies accordingly.

Design
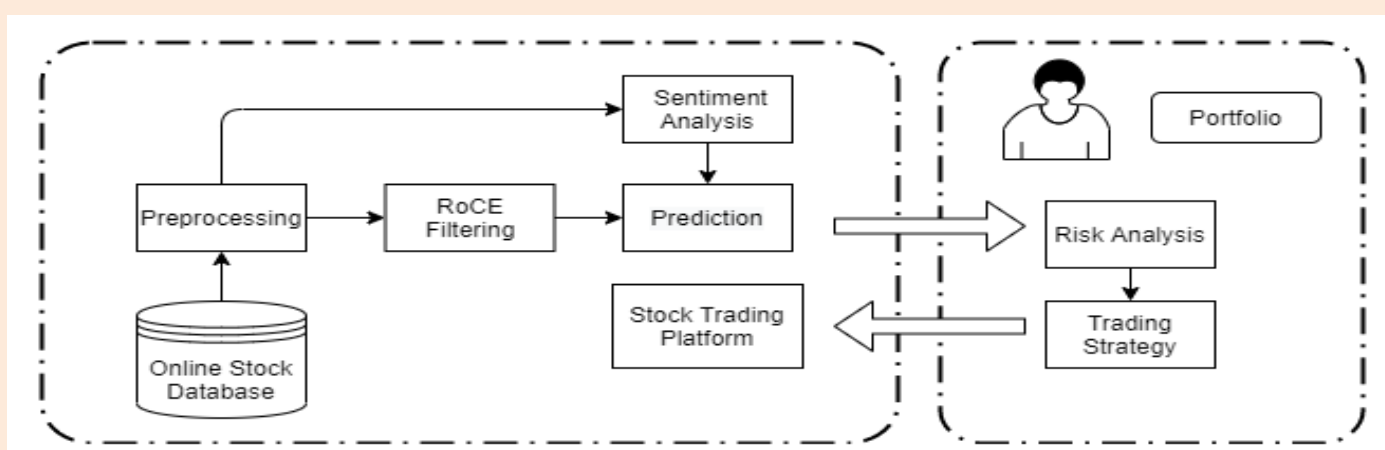
Methodology

The system is divided into different modules each specializing in different functions for the sake of simplicity. The ML modules work in conjunction to provide an integrated system which handles all the needs of the users.
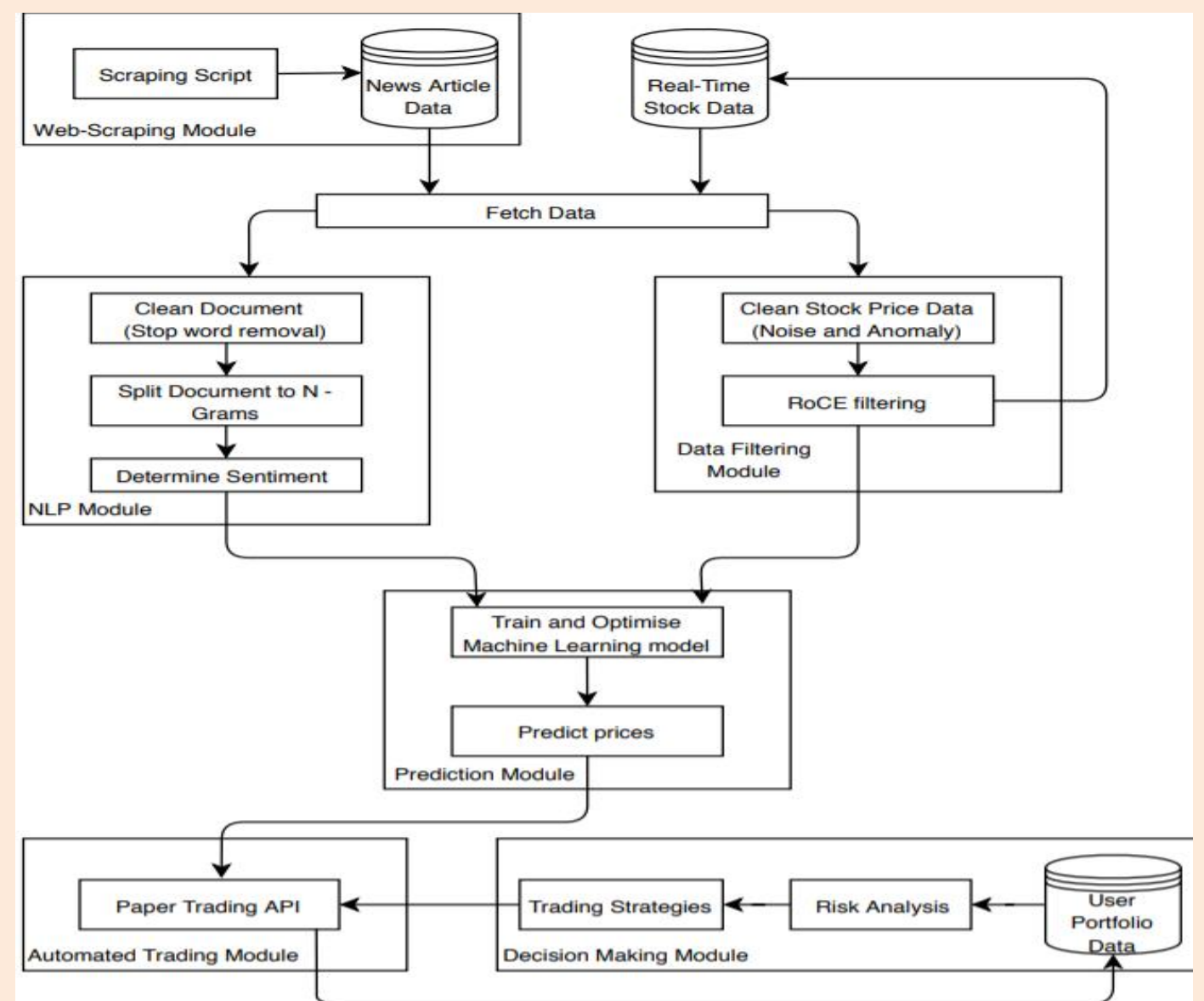
Results

In this phase we found out the trending stocks, stocks with high RoCE and applied the filter to the model.

In a week of paper trading the implemented algorithm, it was observed that the return on initial investment (ROI) was around **2.31%.**

Conclusion

A lot of research has been carried out in the past to automate the trading system. With recent advancements in the technology sector, there is an increasing impetus to optimize automated system and make it user adaptive. The proposed system introduces an RoCE filtering approach with customer dependent strategies to minimize the computation time and give better process performance.

References

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