International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 08 Issue: 04 | April - 2024 SJIF Rating: 8.448 ISSN: 2582-3930

A Systematic Literature Surveyon Algorithimic Trading Using Angle OneSmart API

1st Mrs. Priti Yadav
Department of Information Technology Sinhgad Institute of Technology and Science, Narhe
Pune, India priti.yadav.sits@sinhgad.edu

2nd Ritesh Ghatge
Department of Information Technology Sinhgad Institute of Technology and Science, Narhe
Pune, India riteshghatge.sits.it@.com

3rd Mahesh Pathak
Department of Information Technology Sinhgad Institute of Technology and Science, Narhe
Pune, India maheshpathak.sits.it@gamail.com

4th Sujit Surwase
Department of Information Technology Sinhgad Institute of Technology and Science, Narhe
Pune, India sujitsurwase.sits.it@gmail.com

5th Arnav Nisal
Department of Information Technology Sinhgad Institute of Technology and Science, Narhe
Pune, India arnavnisal.sits.it@gmail.com

6th Kunal Barbhai
Department of Information Technology Sinhgad Institute of Technology and Science, Narhe
Pune, India Kunalbarbhai123jm@gmail.com

Abstract-**Algorithmic trading, often referred to as algo-trading, is a game-changer in the financial industry, revolutionizing the way trading is conducted. By harnessing the power of advanced mathematical algorithms and computational capabilities, algo-trading enables traders to make split-second decisions, execute trades, and manage portfolios with unparalleled speed and precision. In this landscape of digital finance, Angle One API emerges as a pivotal tool, empowering developers and traders to engage in algorithmic trading with utmost efficiency and sophistication.**

Keywords-**Python,AngleOne Smart API,AWS**

I. Introduction

Algorithmic Trading Using Angle One Smart API: Transforming Financial Markets In the realm of modern finance, algorithmic trading stands as a beacon of innovation, employing advanced mathematical algorithms and real-time data analysis to revolutionize trading. The integration of these strategies with the Angle One Smart API, a robust financial data and trading platform, has opened new horizons in the financial world.Algorithmic Trading Unveiled:Algorithmic trading is the epitome of efficiency in trading, harnessing the power of complex algorithms and historical data to execute trades with remarkable precision and speed. The Angle One Smart API: A Comprehensive Solution:Angle One Smart API emerges as a versatile platform, boasting an array of features including real-time market data, historical data accessibility, and advanced trading capabilities.

Its user-friendly interface makes it the ideal playground for the implementation of algorithmic trading strategies. Diverse Algorithmic Trading Strategies:This integration embarks on a journey through the intricacies of algorithmic trading, exploring strategies such as statistical arbitrage, trend following, and machine learning models. These strategies, driven by real-time data provided by the API, aim to maximize profits and optimize trading decisions.

II. Literature Survey

[1] Algorithmic Strategies and Optimization: The literature underscores the diverse range of algorithmic strategies made possible by Angle One Smart API. From statistical arbitrage and trend following to machine learning based models, researchers have delved into the optimization of these strategies using Angle One Smart API's historical data. These studies highlight how advanced algorithms, informed by historical market patterns and real-time data, can enhance trading outcomes and maximize profitability

[2] Risk Management and Compliance: Effective risk management and compliance with regulatory standards are paramount in Algorithmic Trading. Literature in this domain discusses the integration of risk management protocols within algorithms utilizing Angle One Smart

API. This includes techniques such as position sizing, portfolio diversification, and adherence to legal and ethical trading practices. Researchers emphasize the importance of algorithms that not only optimize profits but also manage risks prudently.

[3] Machine Learning and Artificial Intelligence: Machine learning and artificial intelligence (AI) have emerged as powerful tools in Algorithmic Trading. Studies explore the integration of machine learning algorithms, leveraging Angle One Smart API's data streams to create predictive models. These AI-driven algorithms learn from historical data, adapt to changing market conditions, and optimize trading decisions, paving the way for more sophisticated and adaptive trading strategies.

[4] challenges and Future Directions: While the literature highlights the transformative potential of Algorithmic Trading Using Angle One Smart API, it also delves into challenges. Issues such as data security, algorithmic biases, and market liquidity are discussed. Moreover, researchers point towards the need for continuous innovation, exploring novel algorithmic techniques and addressing ethical considerations in algorithmic trading practices.more sophisticated and adaptive trading strategies.

[5] In summary, the literature review illustrates the multifaceted nature of Algorithmic Trading Using Angle One Smart API. From real-time data integration and algorithmic optimization to risk management and the application of advanced technologies, researchers have explored diverse dimensions of this integration. While challenges exist, the literature collectively underscores the tremendous potential this fusion holds, shaping the future landscape of Algorithmic Trading in the global financial markets.

[6] Mahinda The study by K. S. M. A.-G. M. A.-M. Ramzi Saifan published in Informatica provides valuable insights into the application of ensemble machine learning methods in algorithmic stock market trading. By leveraging the collective intelligence of multiple algorithms, these methods offer the potential to create sophisticated, adaptive, and robust trading strategies. The research underscores the importance of adopting advanced machine learning techniques in the financial sector, paving the way for innovative approaches to stock market trading and investment practices.

.[7]Giuseppe Nuti's article provides a comprehensive overview of algorithmic trading, shedding light on its strategies, impact on market efficiency, regulatory challenges, and technological advancements. The article underscores the transformative influence of algorithms in the realm of finance, revolutionizing trading practices and shaping the future of financial markets. As algorithmic trading continues to evolve, it remains essential for market participants, regulators, and researchers to stay abreast of these developments, ensuring the stability and integrity of global financial systems

III. CHALLENGES

Algo-trading using the Angle One Smart API presents several challenges that require careful consideration. Firstly, data accuracy and reliability are paramount. Inaccurate market data can lead to flawed trading strategies and significant financial losses. Ensuring real-time and precise data feeds is an ongoing challenge, requiring constant monitoring and system adjustments.

Secondly, system security is a critical concern. Algo-trading involves handling sensitive financial data and executing trades on behalf of users. Any vulnerabilities in the API or the trading algorithms could expose the system to cyber threats, leading to unauthorized access, data breaches, or even financial fraud.

Moreover, adapting to market dynamics and sudden changes is challenging. Financial markets are influenced by numerous unpredictable factors, including geopolitical events and economic indicators. Algo-traders need to develop adaptive algorithms that can respond swiftly to changing market conditions and mitigate risks effectively.

Lastly, regulatory compliance poses a continuous challenge. Financial markets are subject to strict regulations, and algo-trading systems must comply with various rules and standards. Staying abreast of regulatory changes and ensuring that the algorithmic trading strategies align with legal requirements demand ongoing diligence and legal expertise.

IV. METHODOLOGIES

Methodologies of problem solving Reinforced Learning: In tackling the complexities of Algorithmic Trading Using Angle One Smart API, a systematic and multidisciplinary approach is imperative. The project'smethodologies of problem-solving are designed to ensure the development of robust and adaptive algorithmic trading strategies.

A. Research and Analysis

Comprehensive research on algorithmic trading techniques, financial market dynamics, and the features of the Angle One Smart API lays the groundwork.Analyzing historical market data and studying successful trading models provides valuable insights that inform the algorithmic strategies.

B. Algorithm Development

: Developing algorithms involves a combination of quantitative analysis, statistical modeling, and machine learning techniques. These algorithms are designed to identify market patterns, exploit arbitrage opportunities, and optimize trading decisions based on real-time data accessed through the Angle One Smart API.

C. *Backtesting and Validation*

Rigorous backtesting of algorithms using historical data is essential for evaluating their performance under different market conditions. This iterative process helps in refining the algorithms, ensuring they are robust, adaptive, and capable of handling diverse market scenarios effectively.

D. *Risk Management Integration*

: Integrating risk management methodologies within the algorithms is crucial for protecting capital and ensuring longterm sustainability. Techniques such as portfolio diversification, position sizing, and stop-loss mechanisms are implemented to mitigate potential losses and manage risks prudently

E. *Deep Learning*

In this method primary focus is on detection of objects around the car and lane detection using various techniques. Various object detection models can be obtained pretrained or can be trained using various datasets such as PascalVOC, COCO dataset etc. which consists of various real life dashcam footages. Lane detection can be easily done with image processing and algorithm that can easily identify lanes if road is well conditioned and have well defined lanes. Lane detection is necessary to make sure car stays in lane also it is required to make take turns. Object detection is to throttle control and warn about collision. Using these along with neural network that guides the computer to drive can result in good result performance.

V. CONCLUSION

By leveraging the Angle One Smart API, traders can implement a wide range of trading strategies, including trend following, mean reversion, arbitrage, and machine learning-based approaches. The API's flexibility and reliability enable the creation of complex algorithms that analyze market data, generate trading signals, and execute orders with speed and precision. Furthermore, the integration of the Angle One Smart API opens up opportunities for continuous innovation and research in the field of algorithmic trading. Traders and developers can explore advanced techniques such as machine learning, sentiment analysis, and market microstructure analysis to develop cutting-edge trading algorithms. Additionally, the API facilitates regulatory compliance by providing secure authentication mechanisms and data encryption, ensuring that trading activities adhere to legal standards and regulations. This compliance is critical in today's heavily regulated financial markets.

REFERENCES

[1] Ritesh Kumar Dubey *" Algorithmic Trading Efficiency and its Impact on financial market*
[2] S. J. Brown, *"S. J. Brown, "The Efficient Market Hypothesis, the Financial Analysts Journal, and the Professional Status of Investment Management," Financial Analysts Journal, vol. 76, no. (2), pp. 5-14, 2020..*

[3] Álvaro Cartea *"S. J. J. R. Álvaro Cartea, "Algorithmic Trading, Stochastic Control, and Mutually Exciting Processes," SIAM Review, vol. 60, no. (3), pp. 673-703, 2018.*

[4] G. D. S. Ritika Chopra *"G. D. S. Ritika Chopra, "Application of Artificial Intelligence in Stock Market Forecasting: A Critique, Review, and Research Agenda," Journal of Risk and Financial Management, vol. 14, no. (11), pp. 526-560, 2021.*

[5] JAlexander Posth *" "The Applicability of Self-Play Algorithms to Trading and Forecasting Financial Markets," Frontiers in Artifcial Intelligence, vol. 4, no. (1), pp. 1-6, 2021.*

[6] Mahinda Mailagaha Kumbure *""Machine learning techniques and data for stock market forecasting: Aliterature review," Expert Systems With Applications, vol. 197, no. (2), pp. 1-41, 2022.*

[7] Cheng-Hsiung Hsieh, Dung-Ching Lin, Cheng-Jia Wang, Zong-Ting Chen and Jiun-Jian Liaw *"Real-Time Car Detection and Driving Safety Alarm System With Google Tensorflow Object Detection API"* In 2019 International Conference on Machine Learning and Cybernetics (ICMLC), Chaoyang University of Technology, Taichung, Taiwan, doi: 10.1109/ICMLC48188.2019.8949265.

[8] Giuseppe Nuti *""Algorithmic Trading," Computer, vol. 44, no. (11), pp. 61-69, 2011.*