

ARTIFICIAL INTELLIGENCE: THE REVOLUTION IN STOCK MARKET: A CONCEPTUAL STUDY

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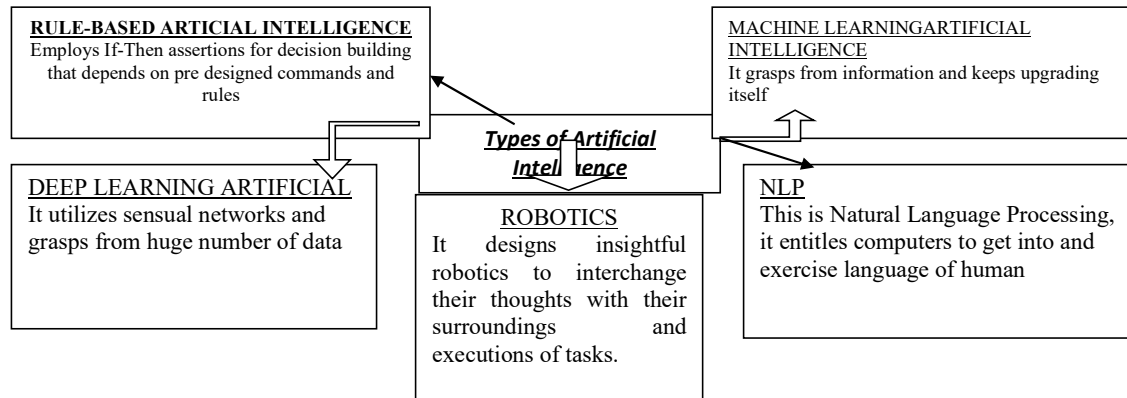
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ABSTRACT

Artificial Intelligence nowadays has become an important part of every sector of economy and thus it is increasingly becoming an extensive part of stock market too. In recent years, AI has been applied to various aspects of stock market trading, including risk management, fraud detection, algorithmic trading, and portfolio optimization. The current research paper attempts to deliver the detailed conceptual study related to the applications and patterns of AI and its way of working in Stock Market through qualitative conceptual study. Specifically, we discuss the applications and concepts of AI in the stock market and examine the potential benefits and management of risks with increased reliance on Artificial Intelligence in investing.

Introduction and background

The word artificial Intelligence explains the process of expanding the systems in computer that can execute the various tasks which commonly needed human intellects and judgements like visual understandings, identification of speech, translation of language and process of decision making. Artificial Intelligence has rapidly become a critical tool in the stock market. The application of AI to trading and investment has enabled investors to access new data sets and make more informed investment decisions. AI has been applied to various aspects of stock market trading, including risk management, fraud detection, algorithmic trading, and portfolio optimization. The advantages of Artificial Intelligence incorporate enhanced expertise and effectiveness, enhanced accuracy, risk management, and cost savings. However, there are also risks associated with increased reliance on AI in investing, including job displacement, data bias, ethical considerations, overreliance, and security risks. Artificial Intelligence plays as a game changer for stock market. Different types Artificial Intelligence are existed such as:



AI is being applied to various aspects of stock market trading, including risk management, fraud detection, algorithmic trading, and portfolio optimization. Algorithms in Artificial Intelligence can examine huge number of information more speedily than humans. It enables investors to take accurate decisions. Forecasting can be done easily with the help of Artificial Intelligence which is based on significant data. AI can help manage risk in the stock market by analysing portfolios and making recommendations to minimize risk. Additionally, those projects that presently are executing by humans beings can be performed by Artificial Intelligence with no efforts which results cost savings for investors.

Literature Review

- Anshul Mittal (2012), in his research study he attempted to correlate public sentiments and market sentiments. In his research he used AI technique for the prediction of market sentiments.
- Kinjal Patel (2018), in her research she has concluded that Artificial Intelligence gradually making its place in every sector of economy and working enhancing the quality of their working. She underlined in her paper the importance of artificial intelligence and how it is spreading its ways in finance like for detecting frauds, security improvement, user authentication for clients etc.
- Gandhmal and Kumar (2019) executed a systematized examination and review study using more than 45 research paper related to forecasting in stock market.
- Obthong (2020), surveyed machine learning algorithm and techniques for stock price prediction
- In a report of Research and Markets, Globally Artificial Intelligence in stock market is estimated to hit up to 4.6\$ billion till 2026
- A study by PwC found that 69% of asset management firms are already using AI in some capacity, with an additional 23% planning to do so in the next three years. In a survey of hedge fund managers conducted by Ernst & Young, 89% of respondents said that they are either currently using or planning to use AI in their investment process.
- Chartered Financial Analyst Institute published a study which specifies that AI can be effective in predicting stock prices, with machine learning models outperforming traditional regression models in some cases.

- According to a report by McKinsey & Company, AI can help asset managers improve their investment decisions by identifying new sources of alpha and reducing risk.
- According to Journal of Finance, researchers found that AI-based trading strategies can generate higher returns than traditional trading strategies, particularly in volatile market conditions.

Types of Artificial Intelligence Trading:

- Quantitative Trading
- Algorithm Trading
- (HFT) High Frequency Trading

Quantitative Trading:

The first type of Artificial Intelligence is Quantitative Trading that helps the investors to recognize the profitable investment opportunities. This type of AI applies models of mathematics, analysis with statistical tools and computational algorithms. This approach to trading is used by a variety of investors, including hedge funds, institutional investors, and individual traders. Quantitative trading is based on the premise that financial markets are driven by identifiable patterns and that these patterns can be used to make profitable trades. By using quantitative analysis to identify these patterns and develop trading algorithms, quantitative traders aim to generate consistent returns over time.

Algorithm Trading or Automated Trading

Another type of Artificial Intelligence is Algorithm Trading which is also called as Automated Trading where computer algorithms are being utilised to make decisions related to trading, performing transactions and to manage positions in financial markets. This approach to trading is used by a variety of investors, including hedge funds, institutional investors, and individual traders. The algorithms used in algorithm trading are typically designed to identify profitable trades based on a variety of factors, including price movements, volume, and market trends. These algorithms can be designed to execute trade impulsively, where no need of human interference is required. This can help to reduce the risk of human error and enable trades to be executed more quickly and efficiently.

High Frequency Trading

(HFT)High Frequency Trading is that type of Artificial Intelligence where expanded computer algorithms are utilized to perform dealing with high frequencies and promptness for better performance of business and transactions. High Frequency Trading applies specific mechanism. This type of AI is outlined in a way that can examine huge amount of data and can perform trades in micro second. HFT firms can make thousands of trades per second, generating small profits on each trade but cumulatively making significant profits over time.

Objectives of the study:

To understand the detailed concept of Artificial Intelligence and its working in Stock market.

Research Methodology.

This research gives a detailed conceptual knowledge on the applications of Artificial Intelligence in stock market and qualitative in nature.

How Artificial Intelligence stock trading works:

AI uses number of important tools for trading companies to study and interpret the financial market, to examine and calculate the price changes, what are the reasons behind price fluctuations, early out sales, and also to monitor the ever-changing markets. These tools are:

- Machine Learning
- Sentiment Analysis
- Algorithm Predictions

Machine Learning

Machine Learning is a subgroup of Artificial Intelligence that requires utilization of algorithm and statistical framework which entitles the computer so that it can enhance its accomplishments without being absolutely planned and scheduled. Basically Machine Learning concentrates on copying the way human does anything and moderately raise its reliability and correctness.

Sentiment Analysis

Sentiment Analysis that is also called as opinion mining, this is a kind of NLP which is Natural Language Processing, SA incorporates algorithms in Machine Learning to recognize and draw out personalized data from text, information like ratings and assessment posted online, social website post. The main objective of Sentiment Analysis is to discover the emotional tone of work text and to categorize it in beneficial or favourable, refusals or rejections and unbiased.

Algorithm Predictions

In making of projections and forecasting related to upcoming occurrences. The system of Algorithm Predictions is applied. The main objective of algorithm prediction is to recognize the model and connection in the information that can be applied to built accurate forecasting relevant to upcoming end results. There are different types of algorithm prediction models, including regression analysis, time series analysis, and machine learning models such as neural networks and decision trees. Machine learning models use algorithms to learn from historical data and make predictions based on that data.

Advantages of AI in Stock Market:

- Improved Efficiency: With the benefits of Artificial Intelligence huge amount of data can be examined in no time what a human takes. It enables the investors to take more accurate decisions.
- Enhanced Accuracy: those patterns and information which can be Passover by human AI can make those predictions more accurately.
- Risk Management: AI can help manage risk in the stock market by analyzing portfolios and making recommendations to minimize risk.
- Cost Savings: Artificial Intelligence can operate many tasks
- Increased Accessibility: AI can make investing more accessible to a wider range of people by providing personalized investment advice based on individual risk tolerance and investment goals.

Conclusion:

In this paper review and conceptual knowledge of Artificial Intelligence and its application in stock market is attempted to present where AI is playing as a game changer for the stock market and its players. Artificial Intelligence enhanced and improved the pattern through which

financial institutions are operated. In conclusion Artificial Intelligence transforming the pattern through which we reach to stock market and the process of making decisions. Artificial Intelligence has the capabilities to enhance the quality of investment result and bring exceptional profits to investors. Eventually the victorious incorporation of AI into stock market will bring number of advantages for financial industries.

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