

PREDICTING STOCK MARKET: AN APPROACH WITH ARTIFICIAL INTELLIGENCE

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ABSTRACT

Artificial Intelligence (AI) technology has advanced impressively since inventors began tampering with its potential. Many believe that the next great use for AI technology will be in the field of financial market speculation. Technology can be used either to make our lives better or make money. The stock exchange market is the most volatile and most dynamic of all. Special care has to be exercised in buying and selling of stocks from different companies or businesses. The probability of losing the stocks and acquiring benefits through the stocks are fifty-fifty. Volatility of the stock market jumbles up a trader's nervous system making it difficult to understand or think rationally. Artificial Intelligence is supposed to be a predictive model that looks at more than technical patterns of trading. It has the ability to identify financial features of companies (e.g. price to earnings ratio, long term (business loans) that will make money in the long run. This requires capabilities from different areas of study and massive computational power which is why it is only prevalent in recent years. This paper tries to attempt of coming up with a basis and prediction using Artificial Intelligence in identifying trading pattern relations which appropriately inter relates with High Frequency Stock Trading based on pre-set criteria.

Keywords : Artificial Intelligence, stock trends, predictive approach, trading pattern, financial market speculation, technology.

INTRODUCTION

Artificial intelligence is actually the study of intelligent agent where user can perceive and managers to act about achieving its goal. The term artificial intelligence is actually a cognitive science that Associates human with other human minds for example learning problem solving speech recognition Game Theory self-driving Cars as well as interpretation of complex data. Nowadays, miscellaneous algorithms are being used in our day to day life so as to analyse human behaviour and decision making. Actually company uses several algorithms which attract relevant customers which may provide benefits like analysing human thought process which can

ultimately help investors text dad to make profitable stock trades.

Stock market prediction is indeed a tough task because do's and don'ts are very relevant aspect in this connection. pulling out profit from stock market prediction are now actually possible with the advent of artificial intelligence through which researchers may try with different methods In connection with financial data which substantially plays a vital role for generating a good decision on the basis of the available benchmarks.

As an investor it's a daring task to totally rely upon a new technology like Artificial Intelligence (AI) for the prediction of stock

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market. Stock trading capacity can be computed with financial business out of the available resources that is truly based on financial data. Fear, greed, threats and all other human emotions shall never play any type of role while predicting stock market trends in the case of Artificial Intelligence (AI). Algorithmic approach for developing A complete package based on the predictions as well as previous data analysis are now trending Only because the machine dependency of human beings. actually limitless possibilities for acquiring more and more profits out of the invested money are the prime concerns of an individual's and this is what AI are now doing with algorithmic trading.

Just because the accuracy of the prediction market several industries are also using this for making important decisions, few of them are as follows :

In medicinal terminology Surge protector markets main forecast about several infectious diseases for example state wise influenza in Iowa was predicted by search market four weeks in advance with clinical data along with participating health care workers.

Sometimes prediction market can also test lactase information theory for information aggregation to which user can improve future forecasting for any sort of potential applications.

This predictive market have actually been hammered for decisions and forecasting where employees can use virtual currency 2 bit on what this thing what may happen to the company in future.

However the accuracy of predictive market in different conditions has been studied and proven buy miscellaneous researchers such as:

Steven Gjerstad (Purdue) in his paper "Risk Aversion, Beliefs, and Prediction Market Equilibrium", has Studied that prediction market price are very close to the belief of participants that is if the agents are respond and the distribution of belief is spread out.

Justin Wolfers (Wharton) and Eric Zitzewitz (Dartmouth) have obtained similar results to Gjerstad's conclusions in their paper "Interpreting

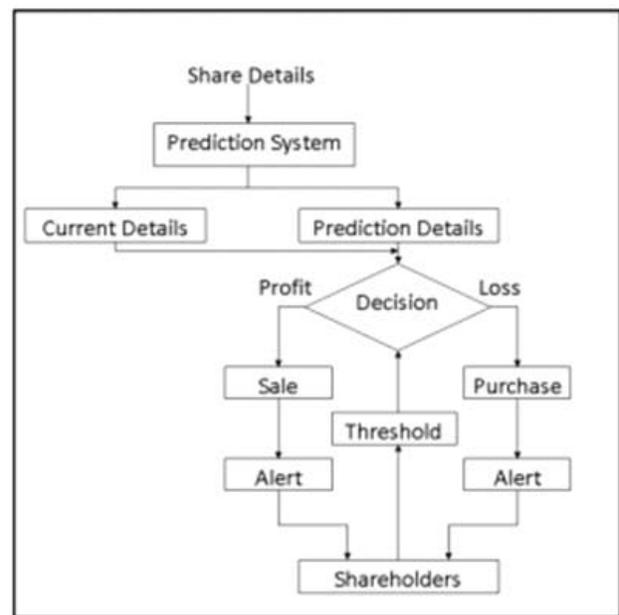
Prediction Market Prices as Probabilities". In practice, the prices of binary prediction markets have proven to be closely related to actual frequencies of events in the real world.

Douglas Hubbard has also conducted a sample of over 400 retired claims which showed that the probability of an event is close to its market price but, more importantly, significantly closer than the average single subjective estimate. However, he also shows that this benefit is partly offset if individuals first undergo calibrated probability assessment training so that they are good at assessing odds subjectively. The key benefit of the market, Hubbard claims, is that it mostly adjusts for uncalibrated estimates and, at the same time, incentivizes market participants to seek further information.

PREDICTING STOCK MARKET IN ASSOCIATION WITH ARTIFICIAL INTELLIGENCE

An important concept in artificial Intelligence is that of a genetic algorithm. Such algorithms employ methods analogous to the processes of natural evolution in order to produce successive generations of software entities that are increasingly fit for their intended purpose.

—Jack Copeland, "The Essential Turing", 2004



STOCK PREDICTION CONCEPT

The possible market prediction goal can be the future stock price or the volatility of the prices or market trend. Using this prediction developer holds two different types of predictions like Dummy and Real time predictions i.e. used in stock market System. In Dummy prediction we define some rules and predict the future price of shares by calculating average price. In the Real time prediction, its compulsory that developer should use internet and see current price of shares of companies.

Considering unique algorithm which makes forecasting for stock market on the basis of previous years data as well as different parameters for which it combines analysis of market trends & search to improve the accuracy of its prediction. Actually Artificial Intelligence (AI) place a vital role between stock market investors and prediction based applications and here few of the Artificial Intelligence (AI) based applications which are now inmarket to predict the stock market updates on daily and weekly basis i.e. going popular day by day are as follows:

Sentient Technologies are basically working on a platform which is used for trading purpose in which companies has built billions and billions of artificial intelligence traders and then they tried to separate every individual trader for distinct companies. Most of the funding for this Artificial Intelligence based application are from AI startups i.e. approximately 135 million USD.

Clone AlgoInc is an American multinational corporation headquartered in Las Vegas, Nevada, US. A technology company, it primarily creates algorithms based on artificial intelligence for mobile applications. Clone AlgoInc issued 707,646,696 shares of common stock and 150,000,000 shares of preferred stock in its preliminary filing.

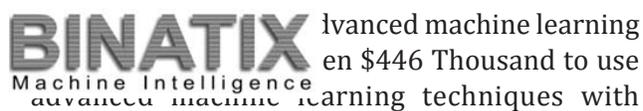
Alpaca, a California-based Fintech startup building AI and database technology for financial trading, on Tuesday the



closing of its venture round, which has secured \$1.75 million. Participants of the latest round include D4V, a joint-venture fund by IDEO and Genuine Startups, Monex Ventures of Monex Group, the parent company of TradeStation, MUCAP of Mitsubishi UFJ Financial Group, Eric Di Benedetto, along with existing and angel investors. The company reported that in March 2016, launched its AlpacaAlgo, a web SaaS that enables traders to automate trade ideas with deep-learning, now having more than 25,000 user-built trading algorithms. Since then Alpaca has been featured in CBI Insights' "41 Startups Bringing AI To Fintech," Forbes Japan, Bloomberg, and Nikkei Newspaper. The company also noted that it executed \$100 million in real-money trading volume in less than two months of live production in last December.

Walnut Algorithms is a French Startup based technology firm focused on applying the latest advances in data science and machine learning research to the financial markets. Walnut advanced machine learning in \$446 Thousand to use Machine Intelligence advanced machine learning techniques with financial expertise to generate absolute return investment strategies in association with financial expertise to generate absolute return investment strategies. They developed sophisticated trading models i.e. able to continuously learn and improve. The strategies are designed to identify meaningful patterns forming in the financial markets with high levels of confidence. They scale over numerous assets globally and intelligently self-adapt to changing market conditions.

Binatix is a deep learning trading firm that came out of stealth mode in 2014 and claims to be nicely profitable having used their strategy for well over three years. Little is known about the company other than what was published in this recode article back in 2014. Binatix is also said to be working with hedge



funds that are developing and implementing investment strategies based on their technology. Binatix applies proprietary biologically-inspired artificial intelligence algorithms to large-scale data analytics.

Aidyia has taken a fresh perspective on financial prediction. Dr. Goertzel and his colleagues employ AGI not only to identify tradable signals, but also to fine-tune and evolve the prediction algorithms with each bit of real time data the system ingests. As a result, Aidyia's prediction system, like human beings, becomes smarter and more effective through real life experience. In addition, because Aidyia employs AGI code that was developed for broad-based research in genomics and robotics, the system is able to identify market inefficiencies different from those exploited by narrow AI software.

FAULTY PREDICTIONS

Although Prediction Markets are often fairly accurate and successful, there are many times the market fails in making the right prediction or making one at all. According to Austrian economist Friedrich Hayek, Prediction Markets are, "mechanisms for collecting vast amounts of information held by individuals and synthesizing it into a useful data point,"

According to James Surowiecki, an American journalist, "The Wisdom of Crowds," in which a group of people with a sufficiently broad range of opinions can collectively be cleverer than any individual. However, this information gathering technique can also lead to the failure of the Prediction Market. Sometimes, the people in these crowds are skewed in their independent judgements due to peer pressure, panic, bias and other breakdowns developed out of a lack of diversity of opinion. One of the main constraints and limits of the wisdom of crowds is that some prediction questions require specialized knowledge that majority of people do not have. Due to this lack of knowledge, the crowd's answers can sometimes be very wrong.

Marginal-trader hypothesis said that "there will always be individuals seeking out places where the crowd is wrong," These individuals, in

a way, put the Prediction Market back on track when the crowd fails and values could be skewed. In early 2017, researchers at MIT developed the "surprisingly popular" algorithm to help improve answer accuracy from large crowds. The method is built off the idea of taking confidence into account when evaluating the accuracy of an answer. The method asks people two things for each question: What they think the right answer is, and what they think popular opinion will be. Actually, the variation between the two aggregate responses indicates the correct answer.

Prediction Markets also fail at gaining traction with researchers and the public, they've only been successful in business and political markets. Science research questions take time to find the right answer, unlike financial and political questions. Yet, most people who are involved in prediction markets want a quick turnaround for the right answer, an area where business and political questions excel.

The recent example, during the 2016 US Presidential Elections, both polls and prediction markets failed to predict the outcome, throwing the world into mass shock. Like the Brexit case, information traders were caught in an infinite loop of self-reinforcement once initial odds were measured, leading traders to "use the current prediction odds as an anchor" and seemingly discounting incoming prediction odds completely. Koleman Strumpf, a University of Kansas professor of business economics, also suggests that a bias effect took place during the US Elections; the crowd was unwilling to believe in an outcome with Trump winning and caused the prediction markets to turn into "an echo chamber", where the same information circulated and ultimately lead to a stagnant market.

CONCLUSION

Artificial intelligence has advanced to amazing lengths in the 21st century. Today, companies are using AI to analyse human behaviour for a variety of reasons. Some wish to target advertising to consumers who are most susceptible to it, others want to use it to hire the

most capable employees to help their company's success. Many companies, in the financial sector, are using this same technology to predict future stock trends. With the use of AI, predictions are now easier for their users and other investors - including venture capitalists - to realize their investment on time. Not only this, it also helps in increasing one's public profile and providing reassurance to customers and suppliers. However, not all algorithmic processes are as transparent as others, just as each has its own unique design and purpose and therefore one must not totally rely on such methods as sometimes it may result in faulty updates.

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