# Acquiring Stock Prediction Techniques

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## I. ABSTRACT

In this research, three approaches are used: LSTM, Seq2seq, and WaveNet. In order to predict stock prices, we compare the performance of various deep learning approaches. To assess the success of these techniques, we utilise the correlation between the anticipated and actual prices as a performance metric. We describe an Artificial Neural Network (ANN) approach to predicting stock market indices, with a focus on forecasting up or down trend movements. We give numerical analysis of specific financial time series using multiple Neural Network topologies. The Multi-layer Perceptron (MLP), Convolutional Neural Networks (CNN), and Long Short-Term Memory (LSTM) are all considered. [1]

## II. INTRODUCTION

Investment methods in the stock market are complicated and based on the analysis of large amounts of data. Machine learning techniques have been widely studied in recent years to see if they might enhance market predictions when compared to traditional methods. The goal of investors participating in the stock market is to make a profit, so forecasting the rise or collapse of financial markets in the future will be crucial in determining investor returns.

Simple statistical analysis of financial data can reveal some trends, but in recent years, investment firms have increasingly turned to artificial intelligence (AI) systems to search for patterns in huge amounts of real-time equities and economic data. Based on a survey of current literature, the goal of this work is to identify future prospects for machine learning (ML) stock market prediction research. A systematic literature review process is utilised to find relevant peer-reviewed journal articles from the last two decades, to evaluate and categorise studies with similar techniques and contexts, and to compare the studies in e-books.

Because it is likewise analysing articles reporting ML application for predictions in a very complex issue area, the current study follows an approach similar to the ones mentioned previously. Relevant publications are found by a systematic search approach, and research that use similar machine learning approaches are grouped together in this technique.It's worth noting that machine learning approaches are frequently used in credit rating, portfolio management, and algorithmic trading (see, for example, [ [1] [2] [3]). In what follows, we show that using neural networks and pre-processed open/close/high/low data, we can attain the same accuracy, as well as working with high frequency, intra-day data.

On the other side, there are a plethora of stock price prediction Apps accessible [8]. However, because these Apps typically do not give users with any information concerning prediction accuracy, it is unclear how much one can trust the predictions provided by these Apps. [4] The following machine learning stock market research taxonomy is the result. Each item falls into one of the four categories listed below: studies involving artificial neural networks, studies involving support vector

machines, studies including genetic algorithms combined with other techniques, and studies including hybrid or other artificial intelligence approaches[7]
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Fig. 1.

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## III. PRESENT RESEARCH QUESTION

We face hurdles in gathering and processing data to extract knowledge and analyse the effect on stock prices as more data becomes available. There's a tight correlation between machine learning approaches and the prediction issues they're used to solve. Large investment firms are looking at it. The most advanced machine learning algorithms have little motivation to share their findings.

The stock market is a source of interest for many businesses, investors, and economists since it includes high risk and large profits. According to their survey, most machine learning algorithms for stock price prediction use technical characteristics rather than fundamental variables, whereas microeconomic variables are used. Stock prices should follow a random walk pattern, according to the efficient market hypothesis, which means that the market should not be predictable more than 50.

## IV. RESEARCH METHODOLOGY

The following is the methodology used for using machine learning to produce stock predictions: 1. Gathering the historical fundamental data . 2. Gather historical stock price data, which will serve as the dependent variable (or label) (what we are trying to predict). 3. Data pre-processing 4. Learn from the data using a machine learning model. 5. Backtest the machine learning model's performance. 6. Gather up-to-date fundamental facts 7. Make projections based on the most recent fundamental facts [6] .

## V. RESOURCES REQUIRED

Each phase, in my estimation, would take one week to complete. The diagram below depicts this representation. After all of these processes have been completed, the use of tools may take a few days..

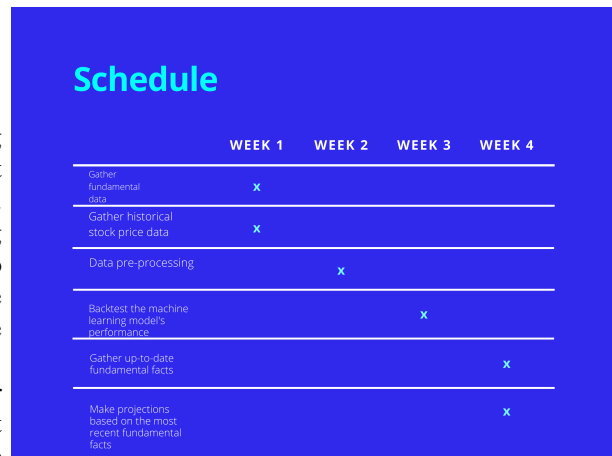The following chart shows the schedule for the project. Gantt Chart



Fig. 2.

## VI. SUMMARY

To Summarize I gave a detailed vision on how stock prediction can be done using Machine Learning Algorithms and What are the challenges faced by using them and also discusses how to avoid them. I followed some steps which are discussed in the research methodology along with the Gantt chart which shows the schedule of the project and the tasks performed. [5]

## References

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[6] Robertmartin, "MachineLearningStocks in python: a starter project and guide"

[7] Troy J. Strader John J. Rozycki Thomas H. Root Yu-Hsiang , "Machine Learning Stock Market Prediction Studies: Review and Research Directions "

[8] J. L. B. ] D. P. Kingma , "Adam: A method for stochastic optimization, 3rd Int. Conf. for Learning Representations, San Diego," 2015