

Stock Price Analysis and Prediction Using Deep Learning

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Introduction

Today we live and breathe data. Forecasting the stock exchange data is an important financial subject which involves an assumption that the fundamental information publicly available in the past has some predictive relationships to the future stock returns. Stock market forecasting contains uncovering the market trends, planning investment tactics, identifying the best time to purchase the stocks and which stocks to purchase. A stock exchange or equity business sector is a non-direct, non-parametric framework that is difficult to model with any sensible exactness

Recently, data mining techniques and artificial intelligence techniques like decision trees, rough set approach, and artificial neural networks have been applied to this area. Data mining refers to extracting or mining knowledge from large data stores or sets. Some of its functionalities are the discovery of concept or class descriptions, associations and correlations, classification, prediction, clustering, trend analysis, outlier and deviation analysis, and similarity analysis

Problem statement: Whether time series forecasting in stocks from 2000 to 2021 can be done using Deep learning technologies?

Description: As a high-risk and high-return market, the stock market has always been closely watched by investors and stock forecasting has always been a research topic of great concern to researchers. In addition, the stock market is an important part of any country's financial market, it reflects the operation of the national economy, and the operation of the stock market has an important impact on the operation of the national economy. Although the issue of predictability of stocks has always been controversial, the study of stock forecasts still helps us understand the laws of some market changes and development. With the advancement of science and technology, a large amount of financial data has been retained providing a solid data foundation for the analysis of the stock market and at the same time, the continuous development and updating of algorithms has provided a powerful tool for people to analyse the stock market.

As an important part of a country's economy, the stock market provides a financing and investment environment for the country's companies and investors. Predicting the future performance of the stock market can not only provide investors with investment advice, but also help companies formulate financing plans, thereby promoting the healthy development of the economy

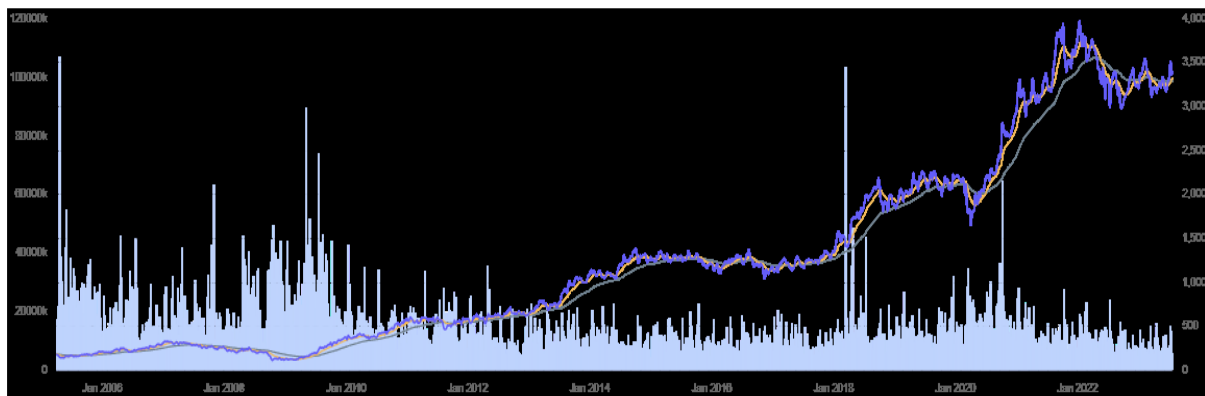
Scope and applicability of the project

Stock Price Prediction using machine learning helps you discover the future value of company stock and other financial assets traded on an exchange. The entire idea of predicting stock prices is to gain significant profits. Here we can apply such models of machine learning which works well when we use big datasets , that it does not give errors in between . And so we have used LSTM Long Short Term Memory as a sort of intermittent neural system. Deep Learning algorithms can be implemented to predict accurate results. Deep learning is a branch of machine learning where neural networks algorithms are inspired by the human brain. Long-short term memory (LSTM) can

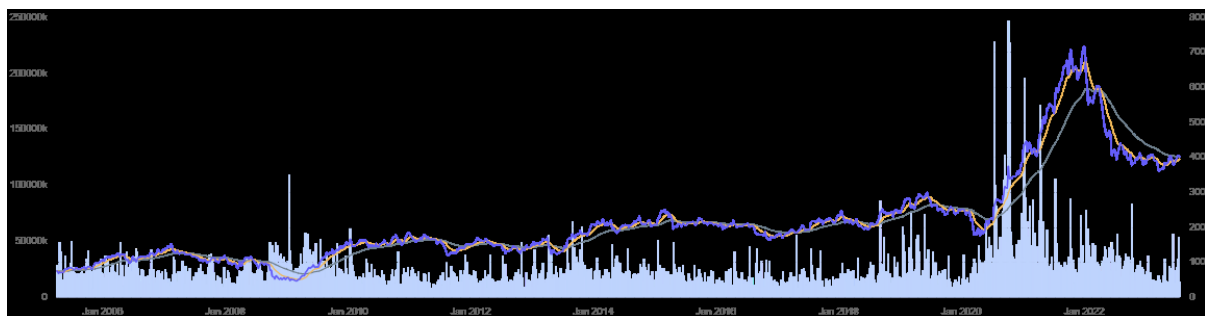
be implemented to predict the stock price. LSTM can learn order dependence in sequence prediction problems.

Name of Stocks taken for the project: TCS and Wipro

<https://www.screener.in/company/TCS/consolidated/>



<https://www.screener.in/company/WIPRO/consolidated/>



Some of the deep learning methods that can be used for stock prediction are 1. Moving average 2. Linear regression, 3. Auto ARIMA and 4. LSTM (Long short term memory)

Stock data is a classic time series. Many researchers have used time series models for forecasting, such as ARIMA or GARCH models, but the assumptions of classic time series models are relatively high. For example, the series needs to be stable and linear. However, there are many factors that affect the stock price of stock data, which makes the stock data itself not stable and linear

With the development of computer science and artificial intelligence, more and more researchers choose machine learning models for prediction, such as support vector machines, perceptron models, etc. Because they can handle nonlinear data, especially support vector machines. This model has a non-linear kernel function, so it has been used by the majority of people in the industry for a period of time.

Stock Price Prediction Using Deep Learning-Research Papers, Datasets and diagrammatic analysis

Research Papers on stock market predictions using Machine learnings

Below is the link for Research paper 1

https://www.researchgate.net/publication/341482418_A_Survey_on_Stock_Market_Prediction_Using_Machine_Learning_Techniques

Below is the link for Research paper 2

<https://www.ijraset.com/best-journal/stock-market-prediction-using-deep-learning>



Research paper 2-
Stock market predicti

Please find the below Top 5 Stock Market Datasets for Machine learning to explore stock market predictions.

Stock Market DataSets

1. News and Stock Data - Originally prepared for a deep learning and NLP class, this dataset was meant to be used for a binary classification task. News and Stock Data includes historical news headlines crawled from Reddit's r/worldnews subreddit from June 8th, 2008 to July 1st, 2016. Additionally, it includes Dow Jones Industrial Average data from August 8th, 2008 to July 1st, 2016.

<https://www.kaggle.com/aaron7sun/stocknews>

2. Stock Market Turnover Ratio - This information comes from the Federal Reserve Bank of St. Louis. The dataset contains data about the total value of shares traded during certain time periods versus the average market capitalization for that period.

<https://fred.stlouisfed.org/series/DDEM01USA156NWDB>

3. Uniqlo Stock Price Prediction - The previous items on this list featured general stock market data. However, this dataset focuses solely on a single company, Uniqlo. One of the largest clothing retailers in Japan, Uniqlo has been around for over five decades. This dataset includes the stock information for the company from 2012 to 2016.

<https://www.kaggle.com/daiearth22/uniqlo-fastretailing-stock-price-prediction>

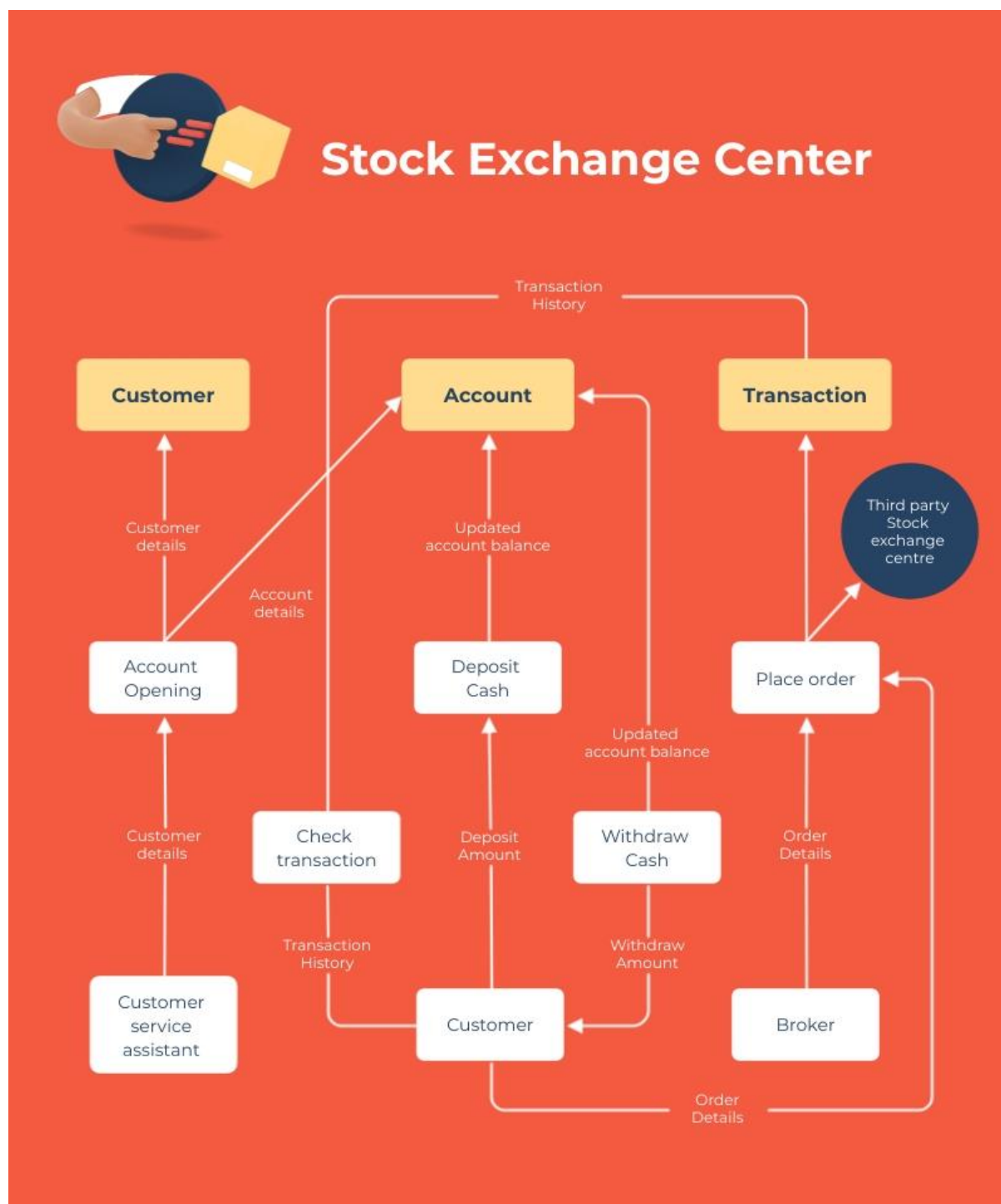
4. Historical Stock Market Dataset - This dataset includes the historical daily prices and volume information for US stocks and ETFs trading on NASDAQ, NYSE, and NYSE MKT. The data was last updated on November 10th, 2017 and the files are all in CSV format.

<https://www.kaggle.com/borismarjanovic/price-volume-data-for-all-us-stocks-etfs>

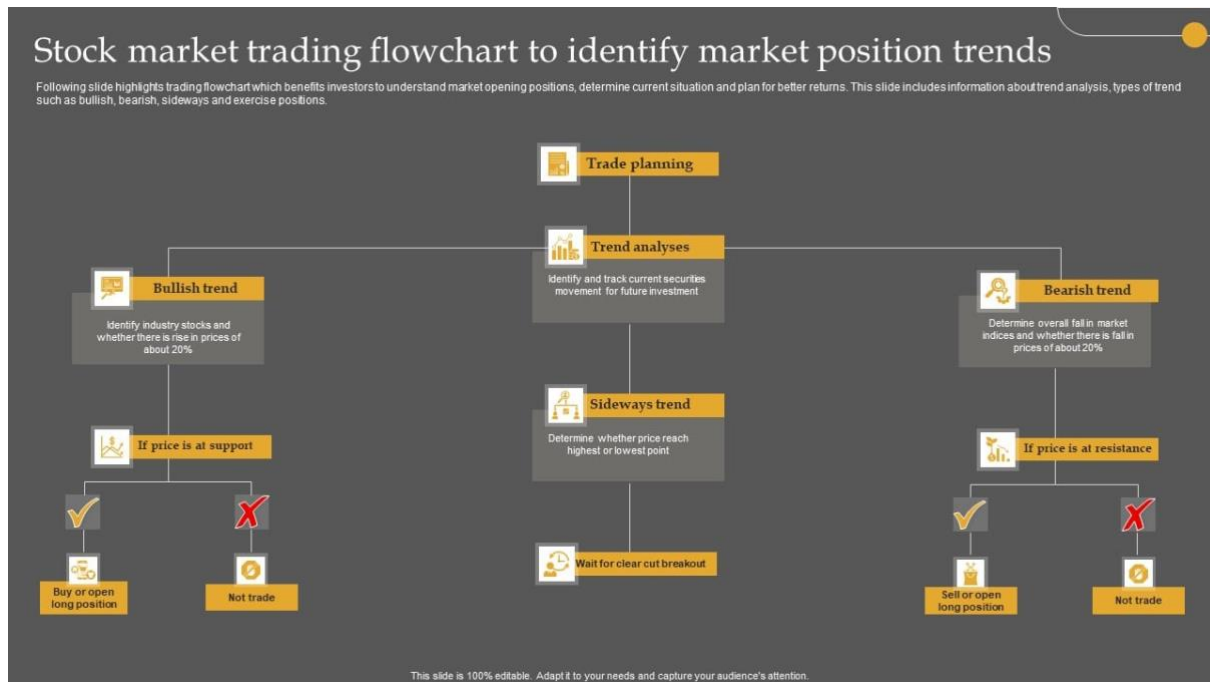
5. Istanbul Stock Exchange - With data taken from imkb.gov.tr and finance.yahoo.com, this dataset was created to test predictive algorithms. The dataset includes info from the Istanbul stock exchange national 100 index, S&P 500, and MSCI. Furthermore, it includes the stock market return indexes of Brazil, Germany, Japan, and the UK.
<https://www.kaggle.com/uciml/istanbul-stock-exchange>

Diagrammatic analysis of stock market processing

Stock exchange operations- Diagrammatic representation



Trend analysis of stocks-Diagrammatic Representation



Stock market prediction using Micro blogging sentiment analysis and Machine learning-Diagrammatic Representation

