Group id : A6

Project Name : Stock Candle

**Assignment 4**

**Project Literature**

**Title:** Preparing Literature Survey of Project Problem Statement.

**Theory :**

The study, “Stock Chart Pattern recognition with Deep Learning” [1] evaluated the performances of CNN and LSTM for recognizing common charts patterns in a stock historical data. It presents two common patterns, the method used to build the training set, the neural networks architectures and the accuracies obtained.

In paper [2], A “window” of various durations is run, breaking it into frames that scale in duration to a single size and to 1 in amplitude. The received frames are converted into 2D matrices and fed for analysis to a 2D convolutional NN, which determines the probability of frames belonging to the classes of patterns. The accuracy of the detector is about 98.6 % with a convolutional NN response speed of about 0.65 seconds per 1000 data samples, which corresponds to an analysis of the closing prices of trades on the exchange for more than 2.5 years.

A lot of studies provide strong evidence that traditional predictive regression models face significant challenges in out-of sample predictability tests due to model uncertainty and parameter instability. Recent studies introduce particular strategies that overcome these problems. Support Vector Machine (SVM) is a relatively new learning algorithm that has the desirable characteristics of the control of the decision function, the use of the kernel method, and the sparsely of the solution. In this paper, we present a theoretical and empirical framework to apply the Support Vector Machines strategy to predict the stock market. Firstly, four company-specific and six macroeconomic factors that may influence the stock trend are selected for further stock multivariate analysis. Secondly, Support Vector Machine is used in analyzing the relationship of these factors and predicting the stock performance. Our results suggest that SVM is a powerful predictive tool for stock predictions in the financial market. [3]

The prediction of the stock market can generate an actual financial loss or gain, so it is practically important to enhance the predictability of models. Consequently, many studies have been trying to model and predict financial time series, using statistical or soft computational skills that are capable of examining the complex and chaotic financial market. In recent years, deep learning techniques have been actively applied based on their excellent achievements in various classification problems. In this study, we constructed a stock price prediction model based on RNN using LSTM units, which is one of the typical methodologies of deep learning. We integrated GA and LSTM network to consider the temporal properties of the stock market, and utilized the customized architectural factors of a model. The LSTM network used in this study is composed with two hidden layers, which is a deep architecture for expressing nonlinear and complex features of the stock market more effectively. GA was employed to search the optimal or near-optimal value for the size of the time window and number of LSTM units in an LSTM network. [4]

Sentiment analysis has proven to be effective while analyzing people's attitudes by examining large social data. In this, a novel approach is designed to extract people's opinions on specific topics by relying on social media content. 70% of dataset is used for training whereas remaining dataset is used during testing. It has been determined that the proposed classifier, classifies the positive, negative and neutral sentiments with an accuracy of 98.32% From the experiment, it has been analyzed that the detection accuracy of sentiments has been increased by 8.99 % from the existing work. The main advantage of this work is that a stop word panel is added in to the GUI, so that a user can add or remove the stop words as per the need. [5]

A system is called offline when system takes images as inputs and tries to predict characters from given images by applying machine learning methods. We have worked on offline character recognition problem in this project. Many machine learning methods have been proposed over the years for solving this problem. In this paper we implemented 6 most popular machine learning methods to solve offline handwriting character recognition problem and compare the performance results to decide which method gives best accuracy results under pre-defined conditions. We have selected 92255 images from NIST Special 19 Database and used them as input images during the training phase of the selected machine learning methods. These methods are SVM, Decision Tree, Bag of Trees, Artificial Neural Networks (ANN), Deep learning network with autoencoders and Convolutional Neural Networks (CNN). We implemented all of these methods and compare the performance of the results according to accuracy metric. The results obtained from the comparison is going to help in deciding which ML method should be used to solve Offline Handwriting Character Recognition problem. [6]

It is seen that, regression architectures are capable of capturing dynamics and are able to make predictions. We trained the model using the data of stock and was able to predict stock price of stock. This shows that, the proposed system is capable of identifying some inter relation with in the data. Also, it is evident from the results that, SVR, RFR & DTR model is capable of identifying the changes in trends. For the proposed methodology DTR is identified as the best model. It uses the information given at a particular instant for prediction. Even though the other two models are used in many other time dependent data analysis, it is not out performing the DTR model in this case. This is due to the sudden changes that occurs in stock markets. The changes occuring in the stock market may not always be in a regular pattern or may not always follow the same cycle. Based on the companies and the sectors, the existence of the trends and the period of their existence will differ. The analysis of these type of trends and cycles will give more profit for the investors. To analyze such information we must use networks like DTR as they rely on the current information. [7]

Based on the results obtained, we conclude that the two companies under consideration have less correlation. The stock value change does not depend on the stock exchange index. It is dependent on the sentiments of social media. The prediction using machine learning algorithms do not give accurate results since the correlation between them is less. Results are not accurate as the dependency is less than 50% for all variables. But the graph trends between TCS and Infosys show similar variation except at some points where it was opposite. Combination of natural language processing techniques for analysis and summarization of text can help in handling such cases. Apart from the parameters which are considered in this paper there can be other parameters which can affect the stock shares such as Inflation, Deflation, International currency and gold rates and International economic policies, etc. Other techniques that can be used are Momentum, Mean Reversion and Martingales. [8]

This paper presents a survey of different techniques such as machine learning techniques, hidden Markov model, ARIMA model and also deep learning techniques. It is observed that selection of the right parameters for the dataset used for prediction plays important role good prediction accuracy. Various machine learning models as well as hybrid and ensemble model give higher rate of accuracy. To get even better accuracy fundamental analysis can be used which uses sentiment analysis and feature selection along with machine learning and deep learning techniques. [9]

Stock price prediction is an important issue in the financial world, as it contributes to the development of effective strategies for stock exchange transactions. In this paper, we propose a generic framework employing Long Short-Term Memory (LSTM) and convolutional neural network (CNN) for adversarial training to forecast high-frequency stock market. This model takes the publicly available index provided by trading software as input to avoid complex financial theory research and difficult technical analysis, which provides the convenience for the ordinary trader of nonfinancial specialty. Our study simulates the trading mode of the actual trader and uses the method of rolling partition training set and testing set to analyze the effect of the model update cycle on the prediction performance. Extensive experiments show that our proposed approach can effectively improve stock price direction prediction accuracy and reduce forecast error. [10]

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9. International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 06 Issue: 05 | May 2019 www.irjet.net p-ISSN: 2395-0072 © 2019, IRJET | Impact Factor value: 7.211 | ISO 9001:2008 Certified Journal | Page 4842 Stock Market Forecasting Techniques: A Survey Rashmi Sutkatti1, Dr. D. A. Torse
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