**LITERATURE SURVEY**

# 1) Prediction of Stock Price Based on LSTM Neural Network

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This study, based on the demand for stock price prediction and the practical problems it faces, compared and analyzed a variety of neural network prediction methods, and finally chose LSTM (Long Short-Term Memory, LSTM) neural network. Then, through in-depth study on how to predict the stock price by the LSTM neural network optimized by MBGD algorithm, the feasibility of the method and the applicability of the model are analyzed, and finally the conclusion is drawn. It is found that historical information is very important to investors as the basis of investment decisions. Past studies have used opening and closing prices as key new predicators of financial markets, but extreme maxima and minima may provide additional information about future price behavior. Therefore, the index of three representative stocks in China's stock market are selected as the research objects, and the key data collected from them include the opening price, closing price, lowest price, highest price, date and daily trading volume. The results show that although LSTM neural network model has some limitations, such as the time lag of prediction, but with attention layer, it can predict stock prices. Its main principle is to discover the role of time series through analyzing the historical information of the stock market, and to deeply explore its internal rules through the selective memory advanced deep learning function of LSTM neural network model, so as to achieve the prediction of stock price trend.

# 2) Neural Network Learning Based on Chaotic Imperialist Competitive Algorithm

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# Imperialist Competitive Algorithm (ICA) is a novel optimization algorithm that inspired by socio-political process of imperialistic competition. ICA shown its excellent capability in diverse optimization tasks. In this paper, a new method for training an Artificial Neural Network using Chaotic Imperialist Competitive Algorithm is proposed. In Chaotic Imperialist Competitive Algorithm (CICA) the chaos theory has been used to adjust the movement angle of colonies towards the imperialists. Using Chaotic Imperialist Competitive Algorithm (CICA), the weights of the Neural Network in its training phase are updated. In this paper, a multi layer Perceptron Neural Network used for prediction of the maximum worth of the stocks change in Tehran's Bourse Market. We trained this Neural Network with CICA, ICA, PSO and GA algorithms and compared the experimental results obtained from these four methods. The consideration of results showed that the training and test error of the network trained by CICA algorithm has been reduced in comparison to the other three methods. However, the run time of the proposed algorithm in training the neural network is less than PSO and GA algorithm it is a little more than ICA algorithm.

# 3) Stock Market Prediction based on Social Sentiments using Machine Learning

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# Machine learning and artificial intelligence techniques are being used in conjunction with data mining to solve a plethora of real world problems. These techniques have proven to be highly effective, yielding maximum accuracy with minimal monetary investment and also saving huge amounts of time. To add to their annual income, nowadays, people have started looking at stock investments as a lucrative option. With expert guidance and intelligent planning, we can almost double our annual revenue through stock returns. That said, stock investment still remains a risky proposition for the uninitiated. Exorbitant wages of the investment experts coupled with a general ignorance pertaining to the financial matters among the public, deters many from trading in stocks. The fear of losses also acts as a deterrent to many. These facts propelled us to harness the power of machine learning to predict the movement of stocks. Using sentiment analysis on the tweets collected using the Twitter API and also the closing values of various stocks, we seek to build a system that forecasts the stock price movement of various companies. Such a prediction would greatly help a potential stock investor in taking informed decisions which would directly contribute to his profits.

# 4) Research on Stock Price Prediction Method Based on Convolutional Neural Network

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# In order to meet the needs of the financial industry and the financial market, effectively improve the rate of return on funds and avoid market risks, this paper proposes a stock price prediction model based on convolution neural network, which has obvious self-adaptability and self-learning ability. Combining the characteristics of CNN (Convolution Neural Network) and Thai stock market, the data set is trained and tested after pretreatment. On this basis, three stocks (BBL, CAPLL&PTT) listed on the Thai Stock Exchange are tested and compared with the actual stock price. The results show that the model based on CNN can effectively identify the changing trend of stock price and predict it which can provide valuable reference for stock price forecast. The prediction accuracy is high, and it is worth further promotion in the financial field.

# 5) Stock market prediction using an improved training algorithm of neural network

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# Predicting closing stock price accurately is an challenging task. Computer aided systems have been proved to be helpful tool for stock prediction such as Artificial Neural Net-work(ANN), Adaptive Neuro Fuzzy Inference System (ANFIS) etc. Latest research works prove that Adaptive Neuro Fuzzy Inference System shows better results than Neural Network for stock prediction. In this paper, an improved Levenberg Marquardt(LM) training algorithm of artificial neural network has been proposed. Improved Levenberg Marquardt algorithm of neural network can predict the possible day-end closing stock price with less memory and time needed, provided previous historical stock market data of Dhaka Stock Exchange such as opening price, highest price, lowest price, total share traded. Morever, improved LM algorithm can predict day-end stock price with 53% less error than ANFIS and traditional LM algorithm. It also requires 30% less time, 54% less memory than traditional LM and 47% less time, 59% less memory than ANFIS.