RSU Cryptocurrency Price Forecasting Using Data Analytic

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Noted : 1 . Student in Non-degree Big data analytic program

Abstract

In this research, a mathematical model was created as a guide for creating a forecasting model (Prediction) of cryptocurrency trading price dynamics and applying it to investment in cryptocurrency trading. In this research, a ready-made software called RapidMinerstudioV.6.0 and historical trading data of digital currency (BTC) during the period from January to December Just a period of time from January-December Just a period of time from https://coinmarketcap.com/ to be a model in this research study. to analyze data and create forecast models This research is an experimental research with quantitative variables. Cryptocurrency closing price By using data type date , open price , closing price , high price , lowest price , trading volume and market capitalization at that time .The following analytical methods were used: 1. Support vector machine for regression. SVM is used to classify groups of data by way of finding a decision plane. The data is divided into two separate parts. In addition, SVM is also applied to create linear function estimation equations. neural network The data will be divided into 2 parts which are the training data and the testing data as 70% and 30% respectively. The results showed that the simulation model had The suitability of predicting the closing price of cryptocurrencies, i.e., forecast models with support vector machines are most suitable for the data set.

Keywords — forecasting model , supervised learning , cryptocurrencies , stock trading

Introduction

Bitcoin is categorized as virtual currency It is also known as crypto currency that uses blockchain to process in a way that does not require an intermediary to manage the trust of the system. by conviction Caused by the mechanism of the blockchain itself, it can be said that digital money (Bitcoin).Trusted protocol that Bitcoin does not use money, which in Thailand Bitcoin is not as widespread as in many countries. Because there are many influences from many aspects that cause rejection to be used, resulting in the near future When all countries have accepted the use of Bitcoin as a financial transaction instead. Current currency This will result in the country having an impact on international transactions both inside and outside the country. However, the emergence of cryptocurrencies is not only Bitcoin, but there are many more. If the user does not agree to be used which means that the technology But if we don't use it, it's useless or doesn't bring any further benefits, and the country's economy will lag behind its neighbors. Investing in the cryptocurrency market is interesting because investing in the cryptocurrency market can offer higher returns than depositing money with banks but because the main price There is an uncertain volatility. This leads to the risk of investing when the price drops more than the initial price that investors buy. However, it reduces the risk of losing capital lost in the stock market. can be avoided If using the results of technical analysis to help you decide to invest in any securities Therefore, in this study, data mining techniques were used to identify indices that must be considered in Cryptocurrency Price Prediction to see the trend of price changes to reduce the risk of loss.

Fig 1. Data mining analysis flow diagram.

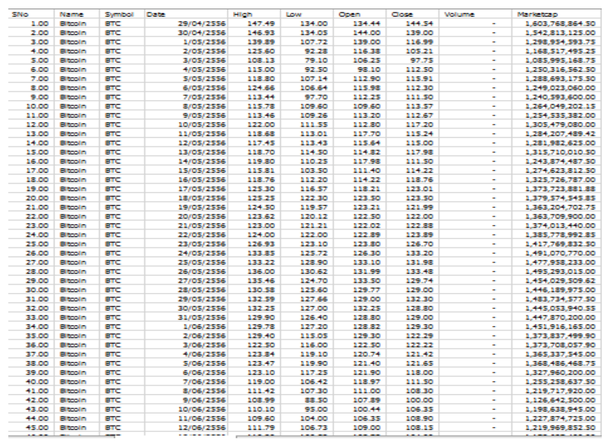


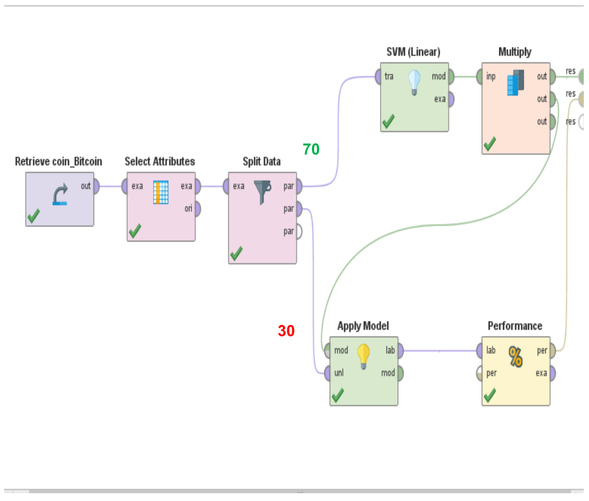
Fig 2. Data type Date , open price , closing price , high price , lowest price , trading volume and market capitalization

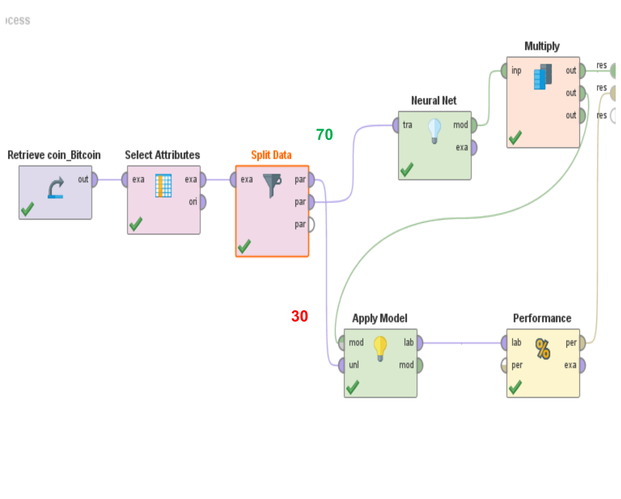
Methodology

Methods of conducting research Start with data preparation conducting research for the researcher Collecting data from the data set will consist of Historical trading data of digital currency (BTC) for the period from January to December. just for a period of time Cryptocurrency closing price Using data types, date, opening price, closing price, high price, lowest price, trading volume and market capitalization.

It starts with cleaning data, corrects any inaccuracies in raw data, and then goes through the data preparation process. In each data set, the data is divided into 2 parts: the data set that will be used to teach the system to create a prediction model, using 70% of the data to teach the system and the other 30% to test for use as the data for the prediction. Test (Testing Data Set) forecasting model.

Fig 3. Data flow diagrams from data splitting and model analysis processes with support vector machine methods for regression and neural networks. It will divide the data into 70/30 for teaching and testing the performance of the model.





Result

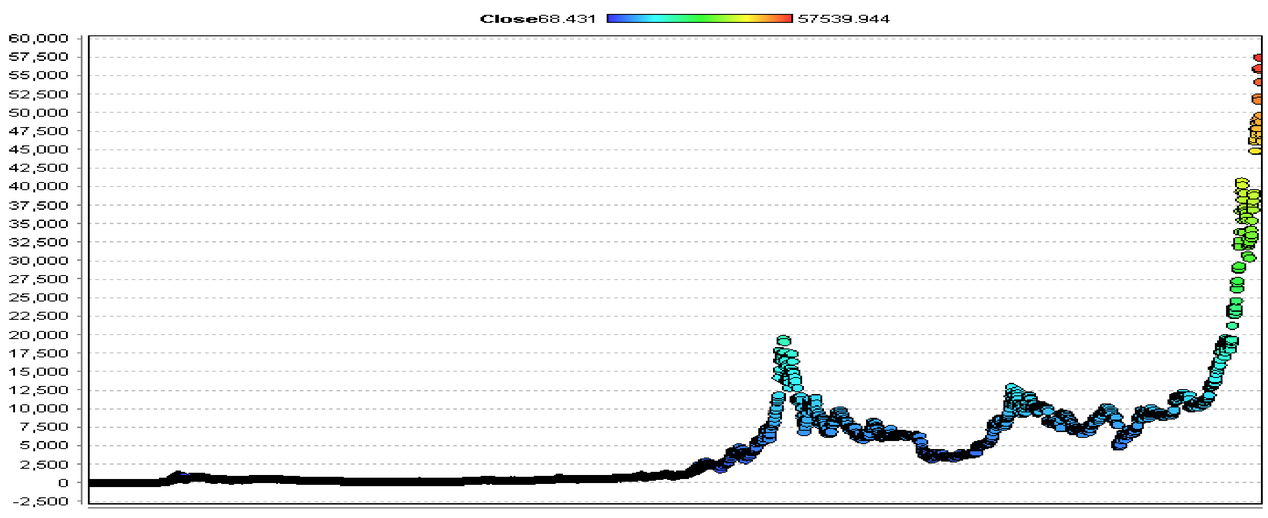


Fig 4. The graph shows the closing price of Bitcoin from April 2013 to March 2021 / data from April 2013 to October 2018 to teach the system.

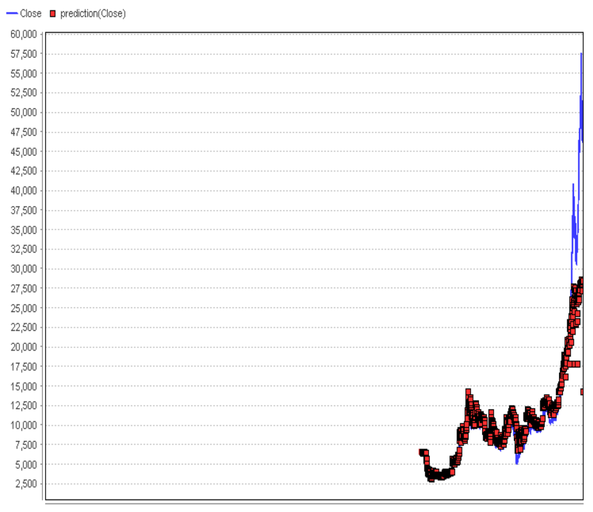


Fig 5. The result of forecasting the closing price of the Bitcoin market obtained from How Neural Networks Compare to Real Bitcoin Prices

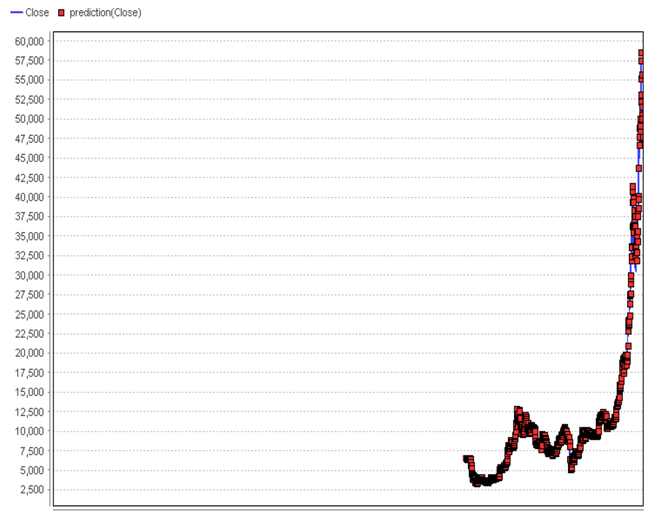


Fig 6. Bitcoin market closing price prediction result obtained from SVM method compared to real Bitcoin price.

Parameters in model	Neural network	Parameters in model	Support vector machine
Training cycles	5000	Size of Kernel cache	20000
Learning rate	0.5	SVM complexity constant	100
Momentum	0.2	convergence epsilon	1.00E-04

Table 1. Constants used in mathematical models of the vector machine support model and the neural network model.

November 2018 to March 2021	Support vector machine			Neural network		
Month	Actual	Predict	Root mean square error	Actual	Predict	Root mean square error
27/9/2020 23:59	10,775.27	10,959.32	440.5	10,775.27	12,534.16	4,210.23
27/10/2020 23:59	13,654.22	13,960.91		13,654.22	14,929.93	
27/11/2020 23:59	17,108.40	17,577.05		17,108.40	17,615.67	
27/12/2020 23:59	26,272.29	27,730.68		26,272.29	20,679.00	
27/1/2021 23:59	30,432.55	31,767.32		30,432.55	24,347.08	
27/2/2021 23:59	46,188.45	48,348.67		46,188.45	28,455.28	

Table 2. Monthly comparison of predictive model performance.

Conclusion

This research explores a mathematical model suitable for cryptocurrency price prediction. by using an instructor-led learning technique is to enable computers to find answers to problems by themselves. After learning a certain amount of information Two techniques were chosen: support vector machines for regression and multilayer neural networks. There are 3 research steps as follows: 1. Analyzing historical statistical data. published on various websites. For example https://coinmarketcap.com/ 2. Data preparation The researcher used the adjusted data. By using a set of instructions within the software and dividing the data into 2 parts for teaching use, 70% selected data from April 2013 to October 2018 and used to test the efficiency of another 30% using data from November 2018 to present.

3. Data analysis for data forecasting models by taking the latter set of data to test the performance The results of the experiment were concluded that The model predicts cryptocurrency prices with a vector machine support for regression. It's a highly effective method. Considering the cause The main reason is The methodology that is suitable for the characteristics of the data set must be selected through the experimental process. different techniques will affect different performance as well.

References

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