Software for Projecting Bitcoin Course by Artificial Neural Network Methods

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The diversification of educational technologies and the rapid development of information tools increase the opportunities for developing intellectual property products at universities and further commercializing them.

In this study, we propose to use artificial neural networks to predict cryptocurrency rates, and more specifically, Bitcoin.

Bitcoin today has the most extensive and extensive network and is the most liquid cryptocurrency. Bitcoin is intangible and not tied to any government currencies, precious metals, or natural resources. The bitcoin exchange rate is extremely mobile and is determined solely by the balance of supply and demand. Currency turnover is not controlled by any authorities, departments or organizations and is carried out exclusively between wallets of network members. Cannot cancel coin transaction. Bitcoin is limited by a total of 21 million coins [1].

In modern science, there are two basic methods of forecasting: fundamental analysis and technical analysis. Briefly, the two methods can be described as follows: a fundamental analysis examines the causes that drive prices, and a technical one examines price movements themselves, abstracting from the reasons that gave rise to them. The methods of artificial neural networks combine these two approaches.

Neural networks are called a complex of information technologies based on the use of artificial neural networks. Artificial neural networks (SNMs) are software or hardware systems built on the principle of organization and functioning of their biological counterpart - the human nervous system. Some advantages of neural networks over traditional computing systems are the ability to solve problems with unknown patterns, noise immunity in the input data, etc.

Due to their flexibility as function approximators, SNMs are reliable in tasks related to the classification of regularities, the estimation of continuous variables, and the prediction of time series. In the latter case, SNM offers several potential advantages over alternative methods when it comes to solving problems with non-linear data that do not fit the normal distribution. The first advantage is that GNMs are extremely versatile, without requiring a formal model definition or a certain probability distribution for the data. With regard to the second advantage, GNMs are better able to cope with the presence of chaotic components (so-called noise, which is present in almost all time series), than most alternative methods.

The most widely used neural network architecture for time series prediction is MLP (Multilayer Perceptron). However, recent studies have confirmed the excellent performance of other neural network models compared to the MLP model for this

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type of task, of which the most widely used model is the recurrent neural network model.

In machine learning, data is usually divided into training (training) and test kits. The model is built on a training set and then evaluated on a test set that has not been "seen" before. The neural network model will use preliminary data to predict the next day's closing price. It is necessary to decide how many previous days he will have access. In the learning process, after each pass, the model remembers the learning error. It is expected that the error will decrease with each pass.

The developed software is a tool for analyzing the historical data of the price of Bitcoin cryptocurrency in order to predict the movement of its exchange rate in the future. This is an applied implementation of an artificial recurrent neural network algorithm that uses public data posted on the WAN to collect data and process it further.

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