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Prediction of Top Ten Cryptocurrencies Price through Logistic Regression Based Time Series Analysis Model

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Abstract

Background: The ubiquity of Time Series [1][2] analysis is not a new phenomenon. The series of observations which is recorded over an interval of time. Cryptocurrency [3] is a virtual digital currency in which transactions are verified and records are maintained by a decentralized system using cryptography. Cryptocurrencies are BitCoin(BTC), Ethereum (ETH), Chainlink (Link), Bitcoin Cash (ETC) , XRP (XRP), LiteCoin (LTC), Cardano(ADA), Polkadot (DOT), Binance Coin (BNB), DogeCoin. Among these Bitcoin [4] is the pioneer because it is the first digital cryptocurrency that shows a significant increase in market capitalization since last few years and more than 70% of the total market capitalization of all cryptocurrencies put together itself. It uses peer to peer technology, and it relies on Blockchain [5] Technology. Each block stores the information of sender, receiver of transactions and all the blocks are linked together by linked list.

Objective: In proposed work I predict the top ten cryptocurrency prices using Time Series ARIMA [6] model but due to difficulty of exact nature of ARIMA model it is very difficult to predict appropriate forecasts. Then for greater efficiency I continue my work using Logistic Regression which measures the relationship between the dependent variable with one or more independent variable. Maximum Likelihood Estimation is used to formulate the probabilities.

Methodology: All the real time data were collected from Coinmarketcap.com and historical data from Yahoo! Finance etc. The training data consists of 5 years database and the testing data consists of 6 months from 1st March 2021 to 31st September, 2021. For conducting tests of these approach training data is 70% and testing data is 30%. The Time series generally focuses on real value prediction method which are Mean Squared Error (MSE) and Root Mean Squared Error (RMSE).

Result and Discussion: To validate the accuracy of this experimental model it is observed that RMSE [7] value must be between 0.2 and 0.5 and adjusted R² value is more than 0.75.

Future Work: I predict the cryptocurrency prices in real time using Logistic Regression model. It can further be improved by two Machine Learning approach Deep Learning and SVM.

References

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