Abstract of Big Data Analytics Project Research

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CIND820 XJH - Big Data Analytics Project

Toronto Metropolitan University

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**Title:**

**Predicting Cryptocurrency Prices Using Machine Learning Algorithms.**

With the advancement and modernization of technology, various industries are rapidly evolving to adapt to the latest global trends. One such change that has been taking place is the increasing prevalence of cryptocurrency as a medium of exchange and investment. This shift towards digital currencies represents a significant departure from traditional fiat currencies and stock exchange practices and It’s the time to understand what digital money really means for everyone’s future **[1], [2]**.

**Research Questions:**

What are the most effective predictive and time series analysis techniques for forecasting short-term closing prices of cryptocurrencies? Which features are influential predictors for classifying the short-term closing prices of selected cryptocurrencies?

What is the correlation between the predicted prices generated by machine learning algorithms and the actual prices of the chosen cryptocurrencies?

**Scope of the Research:**

The project aims to use machine learning algorithms to predict short-term closing prices of different cryptocurrency companies. The dataset for this project is obtained from Kaggle Inc. which contains historical data for the chosen cryptocurrencies. The objective is to compare the predicted prices with the actual prices and identify which cryptocurrency presents the most profitable opportunity for short-term trading.

To answer the research question, we will explore different machine learning algorithms and time-series analysis techniques, including LSTM and ARIMA. We will compare the efficiency and stability of these techniques to identify the most effective ones for our purpose.

**Data Source:**

The data set used in this project is obtained from Kaggle Inc. which contains historical data for the chosen cryptocurrencies. The data is related to the closing prices of each of the six different cryptocurrency companies.

**Limitations of the Research:**

The scope of this study is restricted to specific cryptocurrency companies and the historical data that is accessible for them, and thus, it may not accurately reflect the overall cryptocurrency market. The machine learning algorithms utilized in the analysis rely on historical data, and the future value of cryptocurrencies can be influenced by unpredictable factors, such as changes in regulations, market sentiment, and global events. The precision of the forecasts could be influenced by the quality and comprehensiveness of the data used.

**Background Information:**

Cryptography is used to secure cryptocurrency, which is a digital or virtual form of money. It is decentralised and not under the jurisdiction of a single entity, such as a government or bank, unlike conventional currencies. It is a distributed ledger used to record cryptocurrency transactions and is used to secure and authenticate user data. The worldwide financial system has been significantly impacted by this innovative technology, and its future growth potential is enormous. The first cryptocurrency, Bitcoin, was released in 2009, and since then, the market has expanded to encompass several other cryptocurrencies, with a market capitalization of over $1 trillion. Despite having only recently emerged, cryptocurrencies have already had a significant impact on the financial landscape and are predicted to continue doing so.

**Specific Area of Research:**

The specific area of research in this project is the utilization of machine learning algorithms in time-series analysis to predict the future prices of selected cryptocurrencies and identify profitable opportunities for short-term investment.

**Data Set:**

The project aims to use data to achieve the goal **[5]**.

<https://www.kaggle.com/datasets/sudalairajkumar/cryptocurrencypricehistory>

**Gethib Link:**

<https://github.com/shahgem/CIND-820>