Abstract of Big Data Analytics Project Research

Shahzad Ahmed (501211922)

CIND820 XJH - Big Data Analytics Project

Toronto Metropolitan University

January 23, 2023

**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.

**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 study will be limited to different cryptocurrency companies and the historical data available for them, which may not be representative of the entire cryptocurrency market.

The predictions made by the machine learning algorithms are based on historical data, and the future prices of cryptocurrencies are subject to various unpredictable factors such as regulatory changes, market sentiment, and global events.

The accuracy of the predictions may be affected by the quality and completeness of the data.

**Background Information:**

Cryptocurrency is a digital or virtual currency that uses cryptography for security. It is decentralized, meaning it is not controlled by a central authority like a government or a bank. Bitcoin, the first and most widely used cryptocurrency, was created in 2009. Since then, thousands of other cryptocurrencies have been created, and the market capitalization of the entire cryptocurrency market has grown to hundreds of billions of dollars. Despite its relatively short history, cryptocurrency has already had a profound impact on the global financial system, and it is expected to continue to play an increasingly important role in the future.

**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.

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