Predicting the price of bitcoin in US dollar (BTC/USD) using the LSTM model.

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ABSTRACT

There has been a decent flow in people's engagement in the cryptocurrency market over the past years, around the world. Cryptocurrency investments are seen as a platform that yields rewarding returns. Every trader's goal is to be able to accurately predict the stock prices ahead of time or maybe predict the trend of the stocks. Stock market prediction is determining the future value of stock and this can be done using the previous and current price features. Now the question is, how does users' activities like notifications, alerts, messages etc. help in making accurate predictions? The purpose of this project is to build a forecasting model to predict the trend of cryptocurrency using LSTM, a recurrent neural network based on proprietary alert dataset. The business goal is for traders to utilize this forecasting model to maximize their return on investment capital and make accurate trading decisions.

PROBLEM STATEMENT

1. Objective: Is the alerts dataset a useful predictor of the price of cryptocurrency using the LSTM model?
    a. Key Result 1: the alerts model outperforms crypto market indices by 10% (ie: if buying BTCUSD yielded a 100% return, the model returns 110%)
    b. Key Result 2: can easily test model against various market indices
    c. Key Result 3: can automatically make trades based on model output (buy/sell)

SPECIFICATION

This project will assess some statistical methods like the moving average, exponential model, ARIMA as well as the machine learning model in forecasting the price of Bitcoin in USD amongst other factors. The price column is the response variable and is very important inorder to make an accurate prediction and forecasting. To help the government, buyers, and sellers of Bitcoin make better decisions in trading, the following questions will be answered:

1. Is there any auto-correlation/random walk in the data? Stationary or non-stationary?
2. Is there a relationship between Alerts features and bitcoin price?
3. What will the rate of change in price of Bitcoin look like over a long period of time?
4. What are the different factors that can affect the price of Bitcoin?
5. Is it possible to confidently predict the price of Bitcoin despite the market instability?

DATA COLLECTION

A binance dataset and the one minute market dataset from kaggle would be used. The binance dataset has nine (9) features and thirty six thousand, eight hundred and seventy three (36873)

rows, the market dataset has 2283519 rows and 8 columns. They are therefore considered good datasets for this project.

DATA PROCESSING, PREPARATION, AND FEATURE ENGINEERING.

There will be some feature extractions during data wrangling. New features like Timestamps, Year, Month, Day, Hour, and Price Relative Moving Average.

MODEL: RECURRENT NEURAL NETWORK

A recurrent neural network model, LSTM will be used to forecast and predict the future price of Bitcoin. The model will be designed to recognize patterns in the data. Auto-correlation of the data will be checked. Cross-validation will be used to validate the model performance.