# **CARDANO(ADA) PRICE PREDICTION**

**INTRODUCTION**

Cryptocurrencies are a digital means of exchange which rely on the transmission of digital information, utilizing cryptographic methods to ensure legitimate, unique transactions. The cryptocurrency market has evolved erratically and at unprecedented speed over the course of its short lifespan. The popularity of cryptocurrencies has skyrocketed in 2017 due to several consecutive months of super exponential growth of their market capitalization, which peaked at more than $800 billion in Jan 2018. Today, there are more than 1500 actively traded cryptocurrencies. The Binance Exchange is an exchange founded in 2017 offering trade in more than 500 cryptocurrencies and virtual tokens. It provides a crypto wallet for its traders where they can store their electronic funds.

**TECHNOLOGIES USED**

We used Python programming to build the project and used the Python-Binance API to pull the data from the Binance block chain for Cardano (ADA) cryptocurrency. It then uses the TA-lib library to perform analysis like the RSI (Relative Strength Index), Moving Averages (MA10/MA30 for short term and long-term analysis), and Moving Average Convergence (MACD) to examine how the “Closing Price” of the crypto is performing. For visualizing the above-mentioned concepts, we are using the Plotly library it is also used to plot the candlestick charts for the crypto. The aim of the project is to predict the closing price of Cardano using the open, high, low price and volume. For predicting the data, we are applying the AI Recurrent Neural Network models LSTM (Long Short-Term Memory) and GRU (Gated Recurrent Unit) from Keras TensorFlow. We are evaluating the performance of the model using the RMSE (Root Mean Square Error) and the R^2 score to determine the amount of variability explained.

**BENEFITS AND DRAWBACKS**

* LSTM is well suited for predicting time series for a given time lag of unknown direction. It remembers the values over arbitrary intervals. Relative intensity to gap length gives an advantage to LSTM over other RNN alternatives.
* GRU uses less memory compared to LSTM and is accurate for smaller datasets. It also addresses the vanishing gradient problem which is can be seen prominently in RNN. It is also faster than LSTM.
* LSTM is efficient on larger dataset compared to smaller dataset.

**CHALLENGES FACED**

Some of the challenges faced during the project are the unfamiliarity with cryptocurrencies and their trading patterns. So, the primary task was to understand cryptocurrencies and how the data can be pulled using the Binance API. The next challenge is Understanding the candlestick, RSI and the EA values and graphs and how they explain the data. The biggest one among them is choosing which model to run on the data after a lot of research and reading we have implemented LSTM and GRU.

**PROJECT DEMONSTRATION**

Initially we are streaming the data from the Binance API into the python code, in which we start with visualizing the data by creating a Candlestick data and the continue onto the analysis part where we calculated and plotted RSI, MA, and MACD to better understand the data and the trends of the “CLOSING PRICE” of the ADA. Then the code steps into the preprocessing the is required for the predictions algorithms to run, we are using only Open, High, Low, and Volume to predict the value of the Closing price. The code uses RNN algorithms LSTM and GRU with 2 network layers and gives us an average prediction of 77 and 88 R^2 values, respectively.

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