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Cryptocurrency Price Prediction and Visualization using Deep Learning

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Abstract: With the development of Machine learning and AI- assisted trading has gained interest in the past few years. To bring out the abnormal profits from the cryptocurrency market, we use this machine learning and AI assisted trading. We store the daily data for a certain period. With the strategies assisted by state-of-the-art algorithms we obtain great outcomes. With the help of simple algorithms and architecture, the outcomes made the growth in the cryptocurrency market. The cryptocurrency has become popular in 2017 because of the growth in market capitalization. More than 1500 crypto currencies are actively trading in today's scenario. The crypto currency can be generated and be used for online transactions. Bitcoin is a cryptocurrency technology. The value of Bitcoin keeps varying every second. Therefore, to predict the value of bitcoin price here, we use the LSTM Architecture. Bitcoin is the first digital decentralized cryptocurrency that has shown a significant increase in market capitalization in recent years. The objective of this paper is to determine the predictable price direction of Bitcoin in USD by machine learning techniques like RNN and Tensor-Flow Keras.

Keywords: Cryptocurrency, Prices Prediction, RNN, BeautifulSoup, CoinMarketCap, TradingView, Binance.

I. INTRODUCTION

Cryptocurrency is a virtual or digital currency used in financial systems. It is secured by cryptography that makes it impossible to be counterfeited or double-spent. Furthermore, it is not issued from a central authority or central banks, and it is decentralized virtual currencies that can be converted via cryptographic procedures and this makes it distinguishable from traditional currencies. Bitcoin has begun to carve out a niche for itself, which may either help cryptocurrencies to gain widespread acceptance or be the major cause of their demise. Today, however, there are over 5000 cryptocurrencies and 5.8 million active users in the cryptocurrency industry.

II. USEFULNESS AND DEFINITION

One of the most appealing marketplaces for financial speculation is the cryptocurrency market. Many people have reaped a lot of profits through speculation in the digital markets, but every investment process suffers from many hidden risks. Therefore, market analysts and speculators rely on prediction and machine learning and artificial intelligence algorithms are largely appealing. There is evidence that the usefulness of different information sets varies between machine learning algorithms, implying that prediction is likely to be much more complicated when a set of machine learning algorithms is used.

III. LITERATURE SURVEY

Machine learning is a type of artificial intelligence that can predict the future based on past data. ML-based models have various advantages over other forecasting models as prior research has shown that it not only delivers a result that is nearly or exactly the same as the actual result, but it also improves the accuracy of the result. The authors demonstrate that incorporating cryptocurrency into a portfolio improves its effectiveness in two ways. The first is to reduce the standard deviation, and the second is to provide investors with more allocation options. The best cryptocurrency allocation was reported to be in the range from 5% to 20%, depending on the risk tolerance of the investor. The authors focus on time series data forecasting in particular with algorithms like RNN.

The decision-making process needs to make the appropriate decision at the right time, reducing the risks associated with the investment process. In, a hybrid cryptocurrency prediction system based on Deep Learning, TensorFlow Keras, focusing on two cryptocurrencies, Litecoin and Ethereum. The findings show that the suggested system correctly predicts prices with high accuracy, indicating that the method may be used to forecast prices for a variety of cryptocurrencies. The authors employ the traditional support vector machine and linear regression methods to forecast Bitcoin values.

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Competition in cryptocurrency market:
The authors analyse how networks affect the cryptocurrency market. This was done by taking the exchange rates of different crypto currencies. In this, it was proved that bitcoin was the most dominant in the market. The data that was taken into consideration was consistent with strong network effects.

Keras: Deep learning library for theano and tensorflow:
The authors have very well explained the usage of the tools. The Keras library is implemented on the python ecosystem and supports the running of the TensorFlow in the backend. Keras is the neural network library and was developed to enable fast experimentation. This library supports both convolution networks and recurrent networks.

Tensorflow: Large-scale machine learning on heterogeneous distributed systems:
The author showed the comparison in predicting the value of bitcoin by using various regression models with the sci-kit learn and Keras libraries. By the end of the comparison, the best results obtained are that the R-square was high and the mean squared error was low.

BeautifulSoup: Python package for parsing HTML and XML documents:
It works with your favorite parser to provide idiomatic ways of navigating, searching, and modifying the parse tree. It commonly saves programmers hours or days of work.

IV. DEPENDENCIES

Let's consider the case of bitcoin. Bitcoin's cost shifts in basically the same manner to a stock yet in another manner. There are a few calculations utilized on securities exchange information for cost forecast however the boundaries influencing Bitcoin are particular. Consequently, it is fundamental to expect the cost of Bitcoin all together that right venture choices can be made. The cost of Bitcoin doesn't depend on business occasions or mediating government as opposed to the securities exchange. Consequently, to expect the worth we feel it is crucial for influence AI innovation to anticipate the pace of Bitcoin.

V. ANALYSIS AND INDICATORS

Technical analysis and technical indicators are utilized by brokers and financial exchange specialists to foresee the future cost. Each dealer favors their own specialized marker with every pointer working distinctively in an alternate climate. I involved these specialized markers as highlights for my convolutional network. Rather than allowing my CNN to become familiar with the element all alone, I extricated a ton of elements to make it simpler for CNN to learn through these elements.

VI. NECESSITIES

In the present hyper-directed and protection touchy business climate, you should guarantee that you're utilizing an enormous enough dataset or parts to keep away from the chance of partner any remarkable person with the information your crowd sees. To exacerbate the situation, even enormous datasets or allotments may not be to the point of safeguarding protection. Complex re-ID capacities can surmise novel characters with what is by all accounts a negligible measure of information. As well as taking consideration to protect security when you fabricate datasets, your models should likewise be worked to safeguard security in the outcomes they produce. Blockchain could appear to be resistant to security issues in light of the fact that no genuine characters are related with exchanges. In any case, Peter Szilagyi, a center Ethereum engineer, has discussed different locales fit for making joins between a client's IP address and an Ethereum exchange address.

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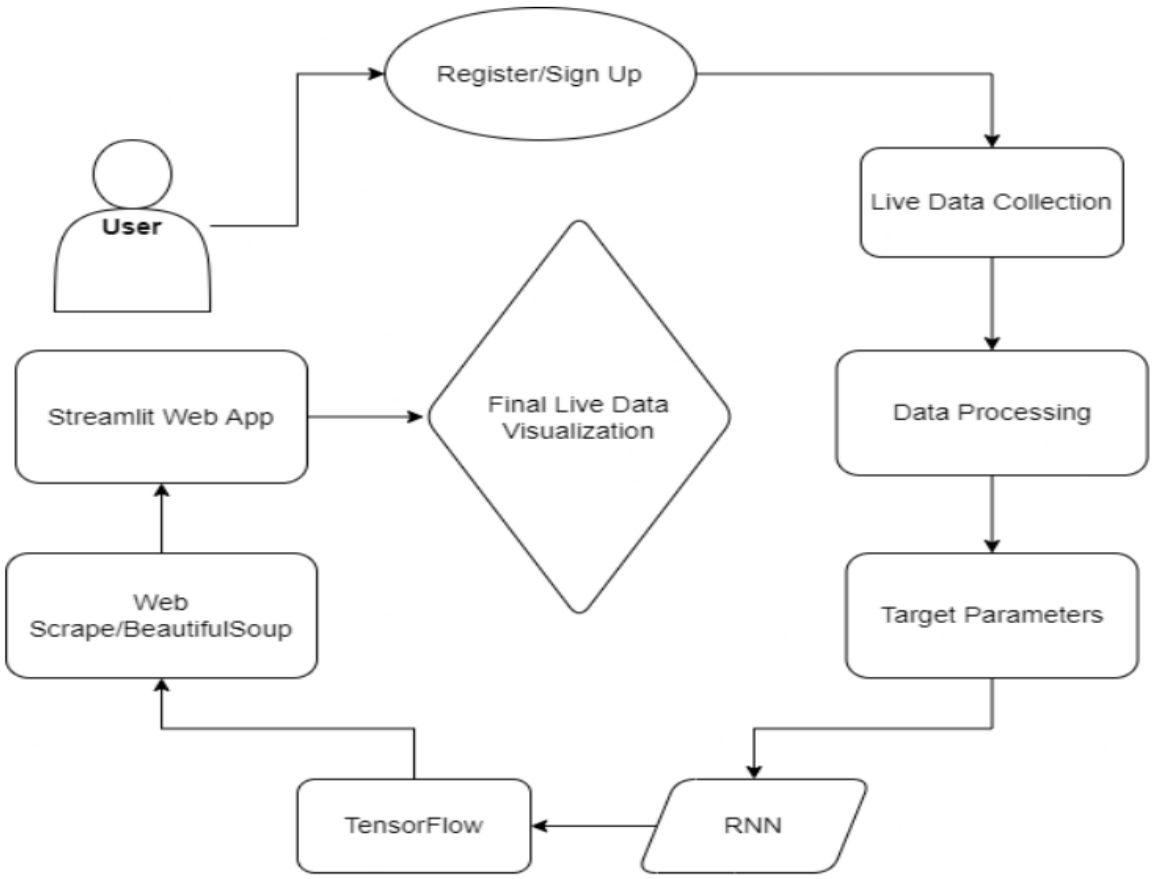
VII. SYSTEM DIAGRAM

UML DIAGRAM:



VIII. ADVANTAGES

1. Quite accurate prediction which will be helpful for traders and professionals.
2. Graphical visualization to get a good overview.
3. Frequent updating of data.
4. New cryptocurrencies will be added with time.

IX. LIMITS

1. As the predictions will be made using historic data and machine learning algorithms, it might take some time to get the accuracy higher.
2. Doesn't include all cryptocurrencies. As increasing in the number every point of time.

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CONCLUSION

The machine learning model is predicting the prices with respective cryptocurrencies. So, it helps the professionals in this cryptocurrency space which will be huge in upcoming years. The model is also useful for people who are beginners in the space to track records on paper as well.

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