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Predicting Price of Bitcoins Using Machine Learning and Flask

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ABSTRACT: Bitcoin investment is currently on trend. Many people tend to invest in either cryptocurrency or bitcoin. But due to a lack of awareness, most people lose money while investing. So to provide a better interactive platform for users to know the current trends of bitcoin, we have developed an application to predict the price of bitcoin using random forest. With the help of this application, a user can get an overview of bitcoins and make sure that the users won't take any wrong direction while investing in bitcoins. The user can get a basic idea about the past trends of bitcoin along with the present and future trends. The developed application can give accurate results. So the user can decide whether to buy or purchase bitcoin based on the trends.

KEYWORDS: Bitcoin, Cryptocurrency, Interactive, Trends

1. INTRODUCTION

Bitcoin is a cryptocurrency that is internet money that has been used as worldwide online money transactions. The era of bitcoin started in 2008 and came to use in 2009. we can see steady growth over the past years. Bitcoins do not have any central authorities such as banks or the government. Irrespective of nationality, one with a common interest in bitcoins can access the proposed web application named DIGICO.

Bitcoin is considered as internet money. In order to make large transactions without any complications in short time then we can look into bitcoins. Most of the people are tending to invest on bitcoins nowadays. There are many platforms that gives the lots of information about the bitcoins and their trends. Most of the previous models were developed using the algorithms like RNN, LSTM. But we have used random forest to plot the dynamic graph in addition to it we have developed the DIGICO with flask. So the developed application will be in light weight, scalable and the user can get the current trends of the bitcoins in no time.

Bitcoin is an decentralized network that there is no central authority controlling it to supply or use like Indian rupee is having banks central authority, bitcoins have very secured transaction and control the creation of new units. It has no border for transaction as it operates on a global peer to peer network that means that you can send and receive any where .the record of all bitcoin transactions is stored on a block chain where information is linked and updated by every second and maintained by network of computers. some current trends of bitcoins are NFT non fungible tokens which are popular in art world, DFD Decentralized finance platform are also growing popularly which allow users to access financial services without need for traditional intermediates. we faced challenges like market volatitly ,regulatory changes and complexities .using of machine learning have shown some promise in predict the price of bitcoins, it is important to approach these prediction with caution and to consider a variety of other factors and data sources when making investment decisions.

In previous papers they used artificial neural network (ANN) and support vector machine(SVM) also some of them used. Recurrent neural network (RNN),long short term memory networks (LSTM)to predict the price of the bitcoins, by

using RNN and LSTM are computationally expensive, particularly when training with large datasets they use large amount of memory and LSTM are difficult to train and this model needs to maintain information of previous time , steps which makes the optimum process challenging they can't process non sequential data. by usage of SVM and ANN has disadvantages of over fitting, computational complexity. To overcome all of this disadvantages in our proposed systems.

In this project we are going to predict the price of the bitcoins using Random Forest machine learning algorithm and developed an application named digico by usage of random forest algorithm creates multiple decision trees and aggregates their predictions to produce a final result .Random forest can handle both continuous and categorical variables and allows for feature selection and a better understanding of the of the relationships between the features and the target variable. it can also overcome the disadvantages like usage of high computational complexity and overfitting

III. LITERATURE REVIEW

RNN and LSTM algorithms had used to propose the previous models. Even in the existing literature, some models predicted the price of bitcoins [1]–[6]. One of the papers was developed during the pandemic using random forest algorithms, and that model does not predict the future price of bitcoins [1]. In this research, we try to predict the price of Bitcoin using past, present, and future data using machine learning algorithms for the web application. The web application has used HTML, CSS, and java script languages, and we also used the Flask module to design the back end applications. proposed

In previous papers, they created time series using data sets for 30, 60, and 120 minutes. They performed GLM or random forest on the datasets to produce three linear models. These tree models are linearly combined to predict the price of bitcoins [1]. According to [2], the author has analyzed the US stock market. The conclusion of his work is the mean square deviation of the excess return. He provided several financial and economic factors that have predictive power for the market excess return.

Instead of directly forecasting the future price of the stock, the authors have considered the patterns from the trends [3]. They performed both short-term and long-term predictions, and another interesting factor that the paper reflects is the performance evaluation criteria of the network. In [4], a comparison was made up between multi-layer perception [MLP] and the nonlinear auto regressive exogenous model [NARX]. They conclude that MLP can also be used for stock market prediction, even though it does not outperform the NARX model in price prediction. The authors made use of a neural network toolbox to build and evaluate the performance of the network.

The paper [5] proposes a model for the prediction of the time of series data based on the concept of a sliding window using the artificial neural network (ANN) technique, which is a radial basis function network. It depicts certain limitations, such as the introduction of hybrid or ensemble techniques with new ones.

The research work presented in [6] attempts to predict the Bitcoin price precisely, taking into consideration various constraints that affect the currency's value. The principal phase of the analysis aims to know and identify day-to-day fashions within the bitcoin marketplace while gaining perception into the best features surrounding the bitcoin price. The authors of [7] assert that bitcoin is the world's most valuable cryptocurrency and is traded on over 40 exchanges worldwide, accepting over 30 different currencies.

IV. METHODOLOGY

A. Work Flow

The below figure describes the working of the system.

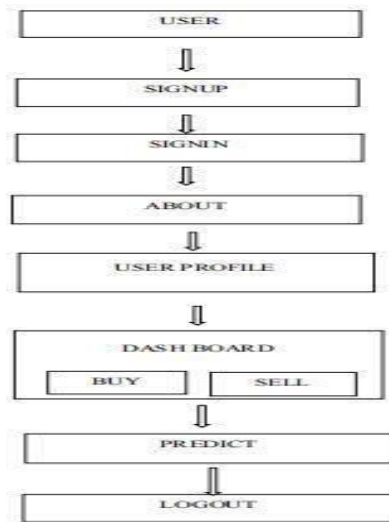
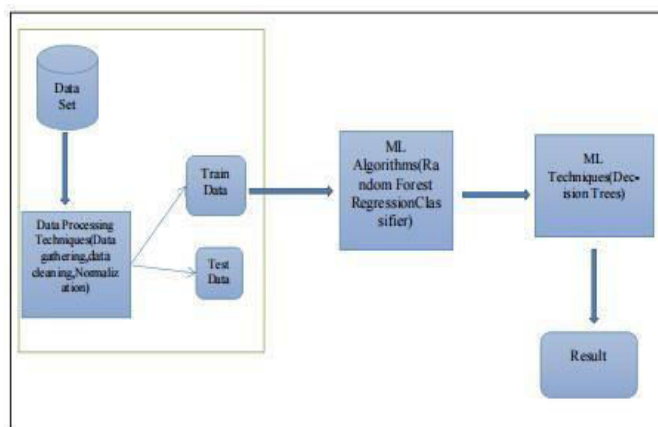


Fig 1 : Flow Diagram

The home page consists of some basic details of bitcoins and after that we have a sing up page where personal details like name, email, password, confirm password and coming to sign in page the user will login to the website by password that has been set during the sign up process from here the user can move to the desired task needed to perform such as view their profile, check the bitcoin account, go to dashboard where they can know about the prediction and they can also logout from the page. after that they can know about there transactions, at the ending the user can see a dynamic graph and know the accuracy to buy, sell the bitcoin in order to achieve the profit.

In this project we are going to create a web application named digit co which helps people to take decision in order to achieve profit and can show whether the bitcoin price increase or decrease in future. Here we can see accuracy in both negative and positive perceptive.

Architecture:



The following figure implies the architecture of proposed application. Here we had taken a dataset from Kaggle and the retrieved dataset undergo operation like cleaning, normalization so that we can delete the unwanted and repeated

data after that we train the data set using the machine learning algorithm .In machine learning we use python language and random forest algorithm which makes decision trees and give us accurate results.

markup language language(html) and for representing the style and layout we use cascading style sheets(css) and java script For designing of the web pages we use hyper text

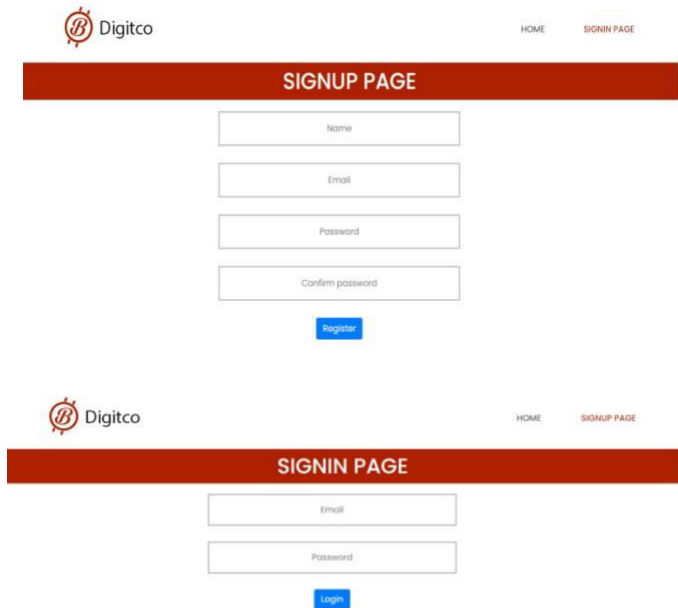
. for the further development of the project we used a python web framework contains background information and code comparisons we use flask framework provides tools ,libraries and technologies that allow you to build a wed application.

B. Implementation

The proposed application comprises of pages like home, sign up & sign in, profile and dashboard. Home page is the page, where the execution of our work get started and the user can proceed to do the further work for enrolling his details and to know about the time to time changes of bitcoin frequencies.



Sign Up and Sign In page: User initially sign up with personal details like name, email id and set the password to their account in sign up page and coming to sign in page, the user will login to the website by the password that has been set during the sign up process.



Home page: In home page we can see the three options like user profile , Dashboard and logout page here when we click on each button it will show different actions like when we click on dash board we will get our complete details like name and email id and where ever user want to logout they can logout by clicking the logout button

Profile page : The profile page consists of user id which is unique to every person and name and email of the person and also the details of the bitcoins here they represent the count of the bitcoins in both positive and negative numbers positive sign indicate profit and negative sign indicates loss if we buy the bitcoin right now and we will go to the other phase where we can see the dashboard



Dashboard : the dashboard shows you a graph that is represented using past and present cost of the bitcoins and it also advice the customer weather to the or sell the bitcoins and also shows the accuracy using the bitcoins.



V. RESULT ANALYSIS

The dynamic graph that has been generated will gives you the trends and based on the trends it will predict whether to buy or sell the bitcoin. So that the user can make a judgement based on it.

To predict the trends we have used random forest algorithm. Random forest is supervised machine learning algorithm which is used to predict the price of the bitcoins . it can perform both classification and regression problems, we use

random subsets of data and features and we end up building a forest of decision trees and can also combine the output of multiple decision trees to reach single output.

Among all the classification methods random forest gave us the highest accuracy.

VI. CONCLUSION AND FUTURE WORK

Machine learning algorithm such as random forest used for real time datasets and models, it was studied to the use of machine learning and its usage to real time problem of cryptocurrency price prediction was performed the implementation of the data processing by analysing the past, present and future of the price of the bitcoins. by using random forest in our proposed model we were able to use the random subsets of data get decision trees and then combine the output of multiple decision trees to reach single output. on comparison with other reviewed papers in the literature survey our proposed system gives us more accuracy.

This application can be extended to include the ability to predict the future prices. we plan to explore the prediction methodology using the updated dataset and use the most accurate and appropriate methods for forecasting. Real-time live forecasting will be one of the primary focus in our future work. Provide better user interface as people in crypto has doubled by huge margins in the last year. Implementing IOT model for smart automatic analysis will be the major contributions in our future work.

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