A Mini Project Synopsis on

Bitcoin Price Prediction

T.E. - I.T Engineering

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CERTIFICATE

This to certify that the Mini Project report on Bitcoin Price Prediction has been submitted by **Mihir Shrivas** (20104081), **Bhushan Patil**(20104094), and **Mayur Shinde** (20104062) who are a Bonafide students of **A. P. Shah Institute of Technology**, Thane, as a partial fulfillment of the requirement for the degree in **Information Technology**, during the academic year **2022-23** in a satisfactory manner as per the curriculum laid down by the University of Mumbai.

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ABSTRACT

Cryptocurrency has gained significant attention in recent years as a form of digital currency with the potential for investment and speculation. Because of its highly volatile nature, there is a need for good predictions on which to base investment decisions. Although existing studies have leveraged machine learning for more accurate cryptocurrency price prediction, few have focused on the feasibility of applying different modeling techniques to samples with different data structures and dimensional features. Accurate prediction of cryptocurrency prices can assist traders and investors in making informed decisions and maximizing their returns. In this project, we developed a machine-learning model using Python to predict cryptocurrency prices based on historical data. We explored various machine learning algorithms, including linear regression, decision trees, and deep learning techniques, and evaluated their performance using appropriate evaluation metrics. The technology used here is to explore the next day change in the price of crypt currency. It is a challenge for a common person to achieve with varying degrees of success. But this is achieved through the implementation of an optimized recurrent neural network (RNN) and a Long Short Term Memory (LSTM) network.

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CHAPTER 1

INTRODUCTION

Cryptocurrencies such as Bitcoin, Ethereum and many others have gained significant attention and popularity in recent years. One of the key challenges for cryptocurrency investors and traders is to accurately predict the price of these volatile assets, as it can greatly impact their investment decisions. In this project, we will be leveraging Python's data analysis and machine learning capabilities to build a model that can predict the prices of cryptocurrencies. We will use historical price data and various machine learning algorithm to develop the model that can predict the prices of cryptocurrencies.

To address this issue, various Bitcoin price prediction systems have been developed, utilizing machine learning algorithms, statistical models, and other techniques. These systems aim to provide investors with accurate forecasts of Bitcoin's price, enabling them to make informed investment decisions.

In this report, we will explore various Bitcoin price prediction systems, their methodology, and their effectiveness in forecasting Bitcoin's price. We will discuss the advantages and limitations of these systems and the challenges involved in predicting the cryptocurrency market's future trends.

Problem Identified:

- Cryptocurrency is a newly introduced digital currency that removes the dependencies of the traditional banking system.
- People do not know much about this currency and are losing their opportunity to earn profit by investing in it.

Solution Proposed:

- So, this application provides all the relatable knowledge required to know about bitcoin & cryptocurrency.
- This application is used to predict the prices of cryptocurrency.

1.1 Purpose:

Cryptocurrency price prediction models are essential tools for traders, investors, and financial institutions as they help in making informed decisions about buying, selling or holding crypto currencies. The primary objective of the Crypto currency price prediction Python project is to develop and implement a model that can forecast the future prices of crypto currencies based on historical data and other relevant factors. Accurate price predictions can potentially help optimize investment strategies and improve returns.

1.2 Problem Statement:

The scam which took place years ago took the people's trust from the traditional banking system. These banks were sometimes not capable enough to keep the record of all money transaction and money was not safe. Cryptocurrency helps in solving these problems by digitalizing the money and keeping the track of all the transactions.

1.3 Objectives:

- To provide updated market prices about the cryptocurrencies
- To provide a graphical representation that helps the users to study the upcoming trends in the market
- To develop an interest in user by providing them with knowledge about cryptocurrencies.
- To create a user-friendly interface that enables investors and traders to access Bitcoin price predictions easily and make informed investment decisions.
- To remove the dependencies of traditional banking.

1.4 Scope

- Can be used to provide proper information and urge people to invest in cryptocurrency.
- Can be used to reduce the risk involved in traditional currency.
- To help user to view predicted cryptocurrency prices.

CHAPTER 2

LITERATURE REVIEW

Sr. no	Title	Author(s)	Year	Algorithms	Advantages	Disadvantages
1	Predicting the Price of the Bitcoin Using Machine Learning	Sean McNally, Jason Roche, Simon Caton	2022	CNN(Convolutional Neural Networks) & RNN	The main advantage of CNN is weight sharing & ease to calculate the large dataset of prices.	The convolution is a significantly slower operation then say max pool, both forward and backward
2	Bitcoin Volatility Forecasting with a Glimpse into Buy & Sell Orders.	K.R. Kajal , K.L. Vishnu	2021	Long Short Term Memory Network (LSTM)	It works the prediction by taking the coin market cap.	It is a long process for filtering the data & low redundancy to perform the prediction.
3	Predicting Bitcoin Prices Using Deep Learning	Ms. A. Bharat, V. K Singh	2020	SVM(Support vector machine	IT convincing in high dimensional. It works well with a clear margin of separation	It doesn't perform well when we have a large dataset

CHAPTER 3

PROPOSED SYSTEM

Due to the unavailability of the banking system for keeping the transaction secure and scam taking place in the banks has lost people's trust just after a new technology called as Blockchain technology came in the market and by using technology cryptocurrency a digital currency came into market.

To provide a user with information regarding cryptocurrency, cryptocurrency price prediction is been developed. Cryptocurrency price prediction provides many features regarding cryptocurrency. There were many difficulties that occurred while developing it such as choosing the algorithm using it and deployment of real-time data which is an essential thing.

3.1 Features and Functionality:

Cryptocurrency price prediction provides features for exploring the cryptocurrency. It includes several functionalities described as below:

- To make user interfaces that are user-friendly and attractive.
- To help the users for investing in cryptocurrency.
- To provide information regarding the coins that are trending in the market.
- To provide updated market prices and references about cryptocurrencies.
- To provide a graphical view which helps the users to study the upcoming trends in the market.
- To remove the dependencies of traditional banking.
- To help users in viewing the future predicted values of cryptocurrencies.

CHAPTER 4

REQUIREMENT ANALYSIS

- **Importance of Requirements Gathering:**

  Requirement gathering is important in Bitcoin price prediction because it helps to clarify the specific needs and objectives of the project. By understanding the requirements of the project, such as the data sources to be used, the time frame for the prediction, and the accuracy needed, the prediction model can be tailored to meet these needs. This can lead to a more effective and accurate Bitcoin price prediction, which is essential for making informed investment decisions. Additionally, requirement gathering can help to identify any potential limitations or constraints of the project, allowing for adjustments to be made before the project begins.

- **Design Constraints:**

  There are several design constraints that need to be considered when developing a Bitcoin price prediction model. Some of these include:

  Data availability: The availability of historical and real-time data on Bitcoin prices is crucial to develop an accurate prediction model. However, there may be limitations on the availability and quality of the data.

  Data quality: The quality of the data used to train the prediction model is important for accurate results. Data errors or inconsistencies can lead to inaccurate predictions.

  Time frame: The prediction model should be designed to consider the time frame for which the prediction is needed. Short-term predictions may require different models and data than long-term predictions.

  Model complexity: Complex models may lead to better accuracy, but they may also require more computational power and resources.

Hardware requirements

- **RAM**

  The application requires a device with a minimum of 512MB RAM while running.

- **Processor speed**

  The application requires a device with a minimum processor speed of 1GHz while running.

Software requirements

- **Operating system**

The application must run on any Operation System, there are several key Considerations to keep in mind.

Compatibility: The OS must be compatible with the software tools and programming languages used to develop the Bitcoin price prediction model.

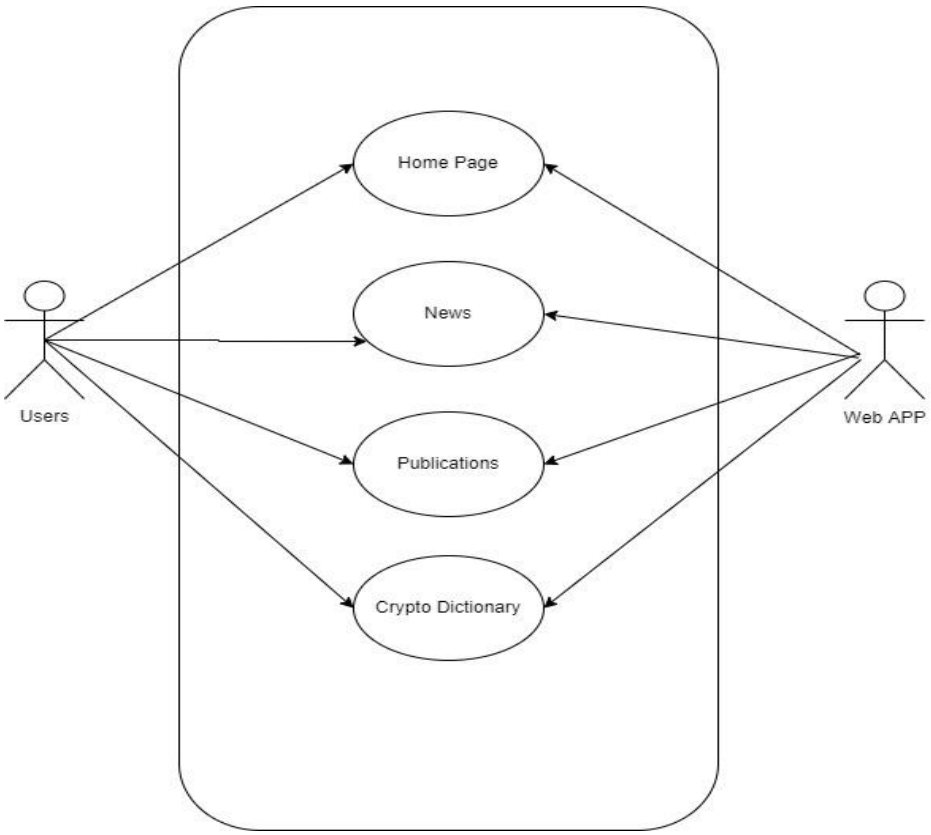
Performance: The OS should be able to provide sufficient performance to support the computational requirements of the Bitcoin price prediction model.

Security: The OS should be designed with security in mind, with appropriate measures in place to protect against malware, viruses, and other security threats.

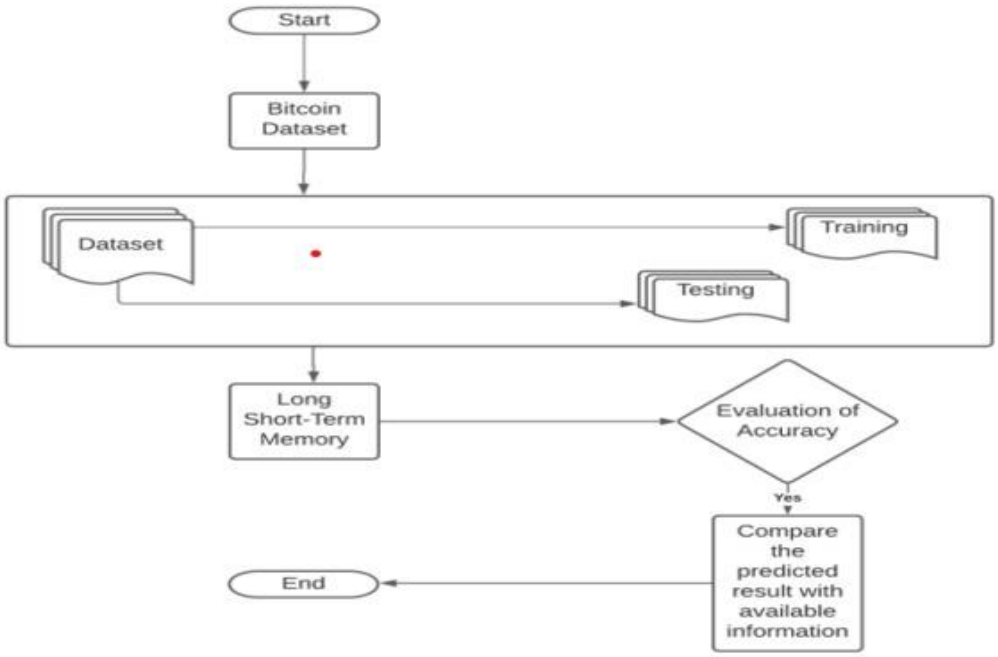
CHAPTER 5

PROJECT DESIGN

5.1 Use Case Diagram



5.2 System Architecture



Explanation of the system Architecture:

Start: This is the starting point of the process, where the system architecture is initiated.

Bitcoin Dataset: The first step is to collect historical Bitcoin price data, which is typically available in the form of a dataset. This dataset may include variables such as the opening price, closing price, high and low prices, volume, and other market indicators.

Dataset Division: Once the dataset is collected, it is divided into two parts, namely the training dataset and the testing dataset. The training dataset is used to train the LSTM model, while the testing dataset is used to evaluate the accuracy of the model.

LSTM: LSTM is a type of deep learning algorithm that is used to model sequential data. In this step, the training dataset is used to train the LSTM model, which then predicts the Bitcoin prices based on the historical data

Evaluation of Accuracy: Once the LSTM model is trained, the testing dataset is used to evaluate the accuracy of the model. The accuracy is typically measured using statistical metrics such as mean squared error, root mean squared error, and mean absolute error.

Comparison: In this step, the predicted results from the LSTM model are compared with the available information on Bitcoin prices. If the predicted results are accurate and match the available information, the model is considered to be successful.

End: This is the final step of the system architecture, where the process of Bitcoin price prediction using LSTM is completed.

The system architecture outlined in the diagram provides a basic framework for building a Bitcoin price prediction model using LSTM. However, this is just one approach, and there are many other techniques and algorithms that can be used to predict Bitcoin prices.

CHAPTER 6

TECHNICAL SPECIFICATION

Development: VS Code

VS Code also known as Visual Studio Code is a source code editor made by Microsoft for Windows, Linux, and MacOS. It has various features such as Debugging, Syntax highlighting, extension, and intelligent code completion.

Frontend: Html, CSS, JavaScript

As a web developer, the three main languages we use to build websites are HTML, CSS, and JavaScript. JavaScript is the programming language, we use HTML to structure the site, and we use CSS to design and layout the web page.

OS: Windows

Windows is a graphical operating system developed by Microsoft. It allows users to view and store files, run software, play games, watch videos, and provides a way to connect to the internet. It was released for both home computing and professional works.

IDE: Streamlit

Streamlit is a free and open-source framework to rapidly build and share beautiful machine learning and data science web apps. It is a Python-based library specifically designed for machine learning engineers.

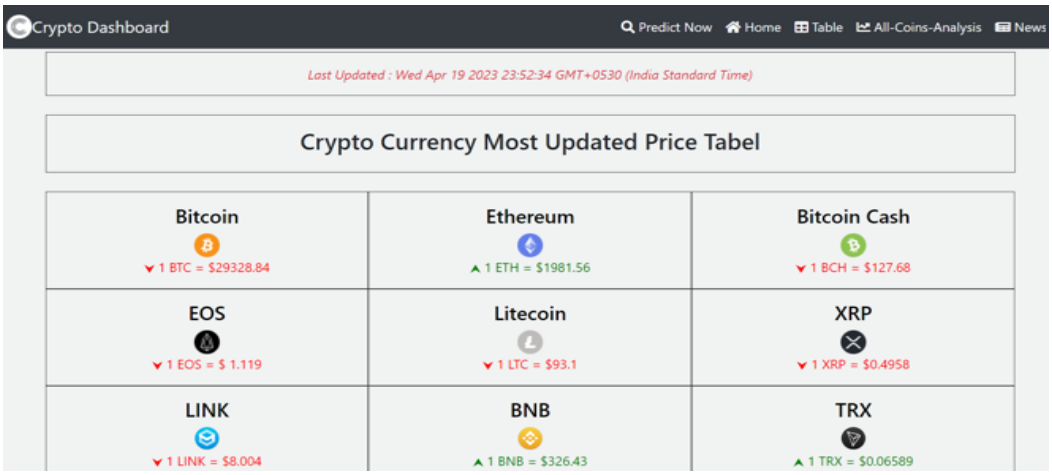
CHAPTER 7

PROJECT SCHEDULING

Sr. No	Group Member	Time duration	Work to be done
1	Mihir Shrivas Bhushan Patil Mayur Shinde	1st week of January	Work on the project ideas & GUI framework
		2nd week of January	Implemented the GUI
2	Mihir Shrivas Bhushan Patil Mayur Shinde	3rd week of January	Implemented the GUI integrated with Streamlit application
3	Mihir Shrivas Bhushan Patil Mayur Shinde	By the end of February month	Learned LSTM Algo & implement in the project

CHAPTER 9

RESULT AND DISCUSSION



8.1. Homepage

8.2. Bitcoin price prediction page

CHAPTER 10

CONCLUSION AND FUTURE SCOPE

The use of machine learning has opened up the world of cryptocurrency trading to a wider range of users, including both beginners and experienced traders. With the help of machine learning algorithms, investors can now explore crypto currencies and predict their future prices more accurately. This technology has proven to be reliable and accurate, making it an essential tool for cryptocurrency traders. Moreover, as the cryptocurrency market continues to evolve and change, machine learning models are expected to become even more advanced, providing valuable insights for investors and traders.

CHAPTER 11

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