A MINI PROJECT

On

DIGITAL CURRENCY PRICE PREDICTION

Submitted

In partial fulfilment for the requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

in

Computer Science and Engineering (Data Science)

By

Name of team members	Roll no
D.SANTHOSHINI RUPA	20641A6720
B.SHIREESHA	20641A6715
G.KALYAN	20641A6728
D.ANANYA	20641A6719

Under the Guidance of

Mrs. G. Pallavi

Department of Computer Science & Engineering (Data Science)

Vaagdevi College of Engineering

(UGC Autonomous, Accredited by NAAC with "A")

Bollikunta, Khila Warangal (Mandal), Warangal Urban – 506005(T.S)

(2020-2024)

VAAGDEVI COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (DATA SCIENCE)

(UGC Autonomous, accredited by NBA, Accredited by NAAC with "A")

Bollikunta, Khila Warangal (Mandal), Warangal Urban –506005(T.S)

CERTIFICATE

This is to certify that the mini project entitled "**DIGITAL CURRENCY PRICE PREDICTION"** is submitted by **D. Santhoshini Rupa (20641A6720), B. Shireesha (20641A6715), G.Kalyan (20641A6728) , D. Ananya (20641A6719),** in partial fulfillment of the requirements for the award of the Degree in Bachelor of Technology in Computer Science and Engineering(Data Science) during the academic year 2023-2024.

Project Guide:	**External Examiner:**	**Head of the Department:**
G. Pallavi		Dr. Ayesha Bhanu

DECLARATION

We declare that the work reported in the project entitled "DIGITAL CURRENCY PRICE PREDICTION" is a record of work done by us in the partial fulfillment for the award of the degree of Bachelor of Technology in Computer Science and Engineering (Data Science) ,VAAGDEVI COLLEGE OF ENGINEERING (Autonomous), Affiliated to JNTUH, Accredited By NBA, under the guidance of Dr.Ayesha Banu , Associate Professor, HOD of CSE (DS). We hereby declare that this project work bears no resemblance to any other project submitted at Vaagdevi College of Engineering or any other university/college for the award of the degree.

Danyam Santhoshini Rupa (20641A6720)

Banothu Shireesha (20641A6715)

Gajjala Kalyan (20641A6728)

Damera Ananya (20641A6719)

ACKNOWLEDGEMENT

The development of the project though it was an arduous task, it has been made by the help of many people. We are pleased to express our thanks to the people whose suggestions, comments, criticisms greatly encouraged us in betterment of the project.

We would like to express our sincere gratitude and indebtedness to my project Guide Mrs G. Pallavi, for her valuable suggestions and interest throughout the completion of this project.

We also thankful to head of the department Dr. Ayesha Banu, Associate professor, CSE(DS) for providing excellent support in completing the project successfully**.**

We would like to express our sincere thanks and profound gratitude to
Dr. K. Prakash, principal of Vaagdevi College of Engineering, for his support guidance and encouragement in the course of our project.

We are also thankful to project Coordinators, for their valuable suggestions, encouragement and motivations for completing this project successfully.

Finally, we would like to take this opportunity to thank our family for their support through the work. We sincerely acknowledge and thank all those who gave directly or indirectly their support in completion of this work.

Danyam Santhoshini Rupa (20641A6720)

Banothu Shireesha (20641A6715)

Gajjala Kalyan (20641A6728)

Damera Ananya (20641A6719)

ABSTRACT

In this project we have Stated correctly forecast the Bitcoin price, Etherium Price, Doge coin Price while taking into account a number of factors that influence the Bitcoin, Etherium, Dogecoin value. our goal is to comprehend and identify everyday trends in the Bitcoin, Etherium, Dogecoin market.

We analyse daily data for 3 digital currencies for the period between Sep 2014 and Aug 2023. To forecast the closing price of the following day, factors including the opening price, highest price, lowest price, volume. we have collected the latest Bitcoin ,Ethereum, Doge coins prices data from Yahoo Finance, using the yfinance API to predict the bitcoin prices for next 365 days. We used the ARIMA (Auto Regressive Integrated Moving Average) model. It is a popular and powerful time series forecasting technique for predicting the Digital Currency prices.

The growing popularity of currencies has sparked a desire to comprehend and forecast their fluctuations, in value. This endeavor seeks to create a model, for predicting the prices of currencies utilizing machine learning techniques and Python programming. The research centers around analyzing price data, market indicators and sentiment analysis to train and assess the effectiveness of the model.

The objective of this project is to create tools, for investors and traders in the cryptocurrency market. These tools will assist them in making informed decisions by providing data driven predictions.

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CHAPTER 1: INTRODUCTION

You must have heard or invested in any digital currency once in your life. It is a digital medium of exchange that is encrypted and decentralized. Many people use digital currencies as a form of investing because it gives great returns even in a short period. BITCOIN, ETHEREUM, and DOGE Coins are among the popular digital currencies today. If you want to know how to predict the future prices of any digital currency with machine learning, this helps for you. In this Project, I will walk you through the task of digital currency price prediction with machine learning using Python.

In existing system, we analysed stock markets prediction, suggests that these methods could be effective also in predicting digital currencies prices. However, the application of machine learning algorithms to the digital currency market has been limited so far to the analysis of Bitcoin prices, using linear regression algorithm. These studies were able to anticipate, to different degrees, the price fluctuations of Bitcoin, and revealed that best results. The system currently in use has a prediction of one month.

Here, we test the performance of model in predicting daily digital currency prices for 3currencies. Use the fitted ARIMA model to forecast future values based on the patterns observed in historical data. In all cases, we build investment portfolios based on the predictions and we compare their performance in terms of return on investment. We find that this model performs better than a baseline ‘simple moving average model where a currency’s price is predicted as the average price across the preceding days. our current analysis extends these forecasts for a one-year period.

1.1 EXISITING SYSTEM

In existing system we analyzed stock markets prediction, suggests that these methods could be effective also in predicting digital currencies prices. However, the application of machine learning algorithms to the digital currency market has been limited so far to the analysis of Bitcoin prices, using linear regression algorithm. These studies were able to anticipate, to different degrees, the price fluctuations of Bitcoin, and revealed that best results. The system currently in use has a prediction of one month. The field of forecasting currency prices encompasses a variety of methods both machine learning based. At present investors and traders heavily depend on price charts, technical analysis indicators and market trends to make informed choices. However the unstable nature of the cryptocurrency market and the impact of factors, like changes and market sentiment pose obstacles, to achieving accurate and dependable predictions.

The need, for an comprehensive approach to predicting digital currency prices is highlighted by the limitations of current systems. This project aims to overcome these shortcomings by creating a model that utilizes cutting edge machine learning techniques integrates sentiment analysis and makes use of the features available, in Python libraries.

1.2 PROPSOED SYSTEM

Here, we test the performance of model in predicting daily digital currency prices for 3currencies. Use the fitted ARIMA model to forecast future values based on the patterns observed in historical data. In all cases, we build investment portfolios based on the predictions and we compare their performance in terms of return on investment. We find that this model performs better than a baseline ‘simple moving average model where a currency’s price is predicted as the average price across the preceding days. our current analysis extends these forecasts for a one-year period. Then the pre-processing techniques are applied coping with the missing value the pre-processed data is then accustomed to building a model by dividing the Info set into a 7:3 ratio where 70% of the data is employed for training purposes that's model learns the pattern and therefore the remaining testing data is used to test the performance of knowledge. The regression model can also be accustomed predict the value of the cryptocurrency. The developed system intends to create a dependable and precise tool for forecasting digital currency prices, guiding users’ decisions in the ever-changing cryptocurrency environment. These will in turn facilitate the improvement of the more advanced and effective devices towards the cryptocurrency investors and/or traders.

1.3 SOFTWARE REQUIREMENTS

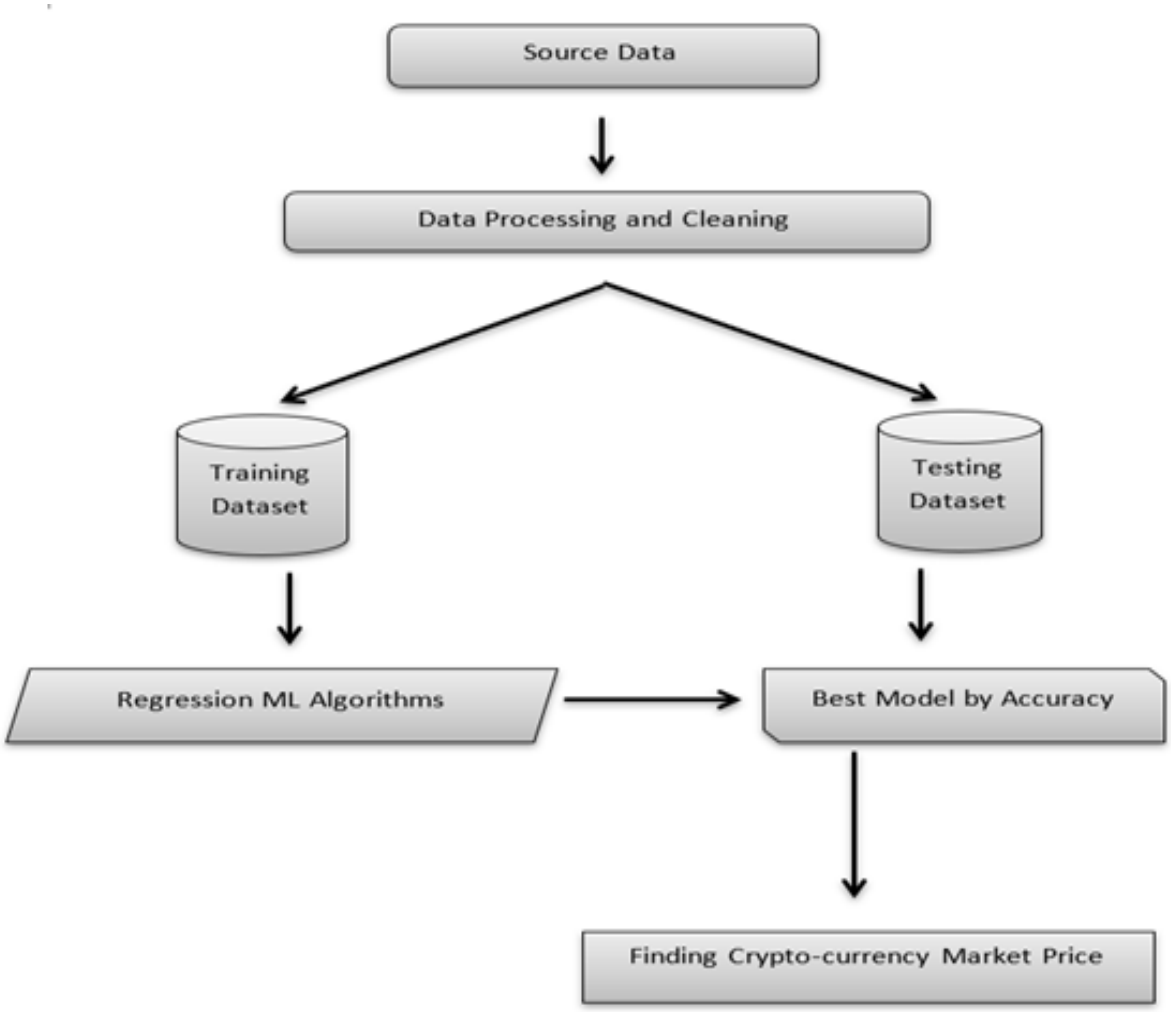
- ♦ Python
- ♦ Anaconda
- ♦ Windows 11
- ♦ VS code

1.4 Hardware Requirements

- ♦ RAM (16GB)
- ♦ ROM (64-bit processor)
- ♦ HARD DISK 324GB
- ♦ I5 PROCESSOR

CHAPTER 2: DESIGN OF THE MINI PROJECT

2.1 FLOW CHART



2.2 ALGORITHM

□ Linear Regression:

The linear regression model was used to predict the various cryptocurrency price using the open, low, and high cost.

```
Close          1.000000
Adj Close      1.000000
High           0.999459
Low            0.999362
Open           0.998798
Date           0.750830
Volume         0.695162
Name: Close, dtype: float64
```

□ Data Preprocessing Algorithms

The process of data preprocessing ensures that the data is in a readable format by the algorithm, and it eliminates errors and outliers that may adversely affect the model's performance

□ Graphical Visualization Techniques

Data visualization techniques use visual elements like charts, graphs, and maps to help people understand data. They can reveal trends and patterns, and increase the clarity and credibility of reports.

□ Machine Learning Integration Algorithms

This algorithm focuses on developing algorithms and models that enable computers to learn and improve from experience without being explicitly programmed.

ADVANTAGES & DISADVANTAGES

2.3 ADVANTAGES

- Data-driven decision making
- Risk Mitigation
- high security
- financial planning
- peer-to-peer network
- Decentralization
- Transparency

2.3 DISADVANTAGES

- Volatility
- Complexity
- Data Quality
- Regulatory Risks
- Uncertainty and risk

CHAPTER 3

IMPLEMENTATION:

BITCOIN

```
pip intsall yfinance
import pandas as pd
import yfinance as yf
import datetime
from datetime import date, timedelta
today = date.today()

d1 = today.strftime("%Y-%m-%d")
end_date = d1
d2 = date.today() - timedelta(days=6000)
d2 = d2.strftime("%Y-%m-%d")
start_date = d2

data = yf.download('BTC-USD',
                   start=start_date,
                   end=end_date,
                   progress=False)
data["Date"] = data.index
data = data[["Date", "Open", "High", "Low", "Close", "Adj Close", "Volume"]]
data.reset_index(drop=True, inplace=True)
print(data.head(6000))

pd.set_option('display.max_rows',3273)
```

```
data

import plotly.graph_objects as go
figure = go.Figure(data=[go.Candlestick(x=data["Date"],
                                        open=data["Open"],
                                        high=data["High"],
                                        low=data["Low"],
                                        close=data["Close"])])

figure.update_layout(title = "Bitcoin Price Analysis", xaxis_rangeslider_visible=False)
figure.show()

correlation = data.corr()
print(correlation["Close"].sort_values(ascending=False))

pip install AutoTS
from autots import AutoTS
model = AutoTS(forecast_length=365, frequency='infer', ensemble='simple')
model = model.fit(data, date_col='Date', value_col='Close', id_col=None)
prediction = model.predict()
forecast = prediction.forecast
print(forecast)

forecast
```

ETHERIUMCOIN

```
pip install yfinance
import pandas as pd
import yfinance as yf
import datetime
from datetime import date, timedelta
today = date.today()

d1 = today.strftime("%Y-%m-%d")
end_date = d1
d2 = date.today() - timedelta(days=6000)
d2 = d2.strftime("%Y-%m-%d")
start_date = d2

data = yf.download('ETH-USD',
                   start=start_date,
                   end=end_date,
                   progress=False)
data["Date"] = data.index
data = data[["Date", "Open", "High", "Low", "Close", "Adj Close", "Volume"]]
data.reset_index(drop=True, inplace=True)
print(data.head(6000))

pd.set_option('display.max_rows',2124)
data
import plotly.graph_objects as go
figure = go.Figure(data=[go.Candlestick(x=data["Date"],
                                        open=data["Open"],
                                        high=data["High"],
                                        low=data["Low"],
                                        close=data["Close"])])
```

```
figure.update_layout(title = "Ethereum Price Analysis", xaxis_rangeslider_visible=False)
figure.show()

correlation = data.corr()
print(correlation["Close"].sort_values(ascending=False))

pip install AutoTS
from autots import AutoTS
model = AutoTS(forecast_length=365, frequency='infer', ensemble='simple')
model = model.fit(data, date_col='Date', value_col='Close', id_col=None)
prediction = model.predict()
forecast = prediction.forecast
print(forecast)

forecast
```

DOGECOIN

```
pip install yfinance
import pandas as pd
import yfinance as yf
import datetime
from datetime import date, timedelta
today = date.today()

d1 = today.strftime("%Y-%m-%d")
end_date = d1
d2 = date.today() - timedelta(days=6000)
d2 = d2.strftime("%Y-%m-%d")
start_date = d2

data = yf.download('DOGE-USD',
                   start=start_date,
                   end=end_date,
                   progress=False)
data["Date"] = data.index
data = data[["Date", "Open", "High", "Low", "Close", "Adj Close", "Volume"]]
data.reset_index(drop=True, inplace=True)
print(data.head(6000))

pd.set_option('display.max_rows',2124)
data
```

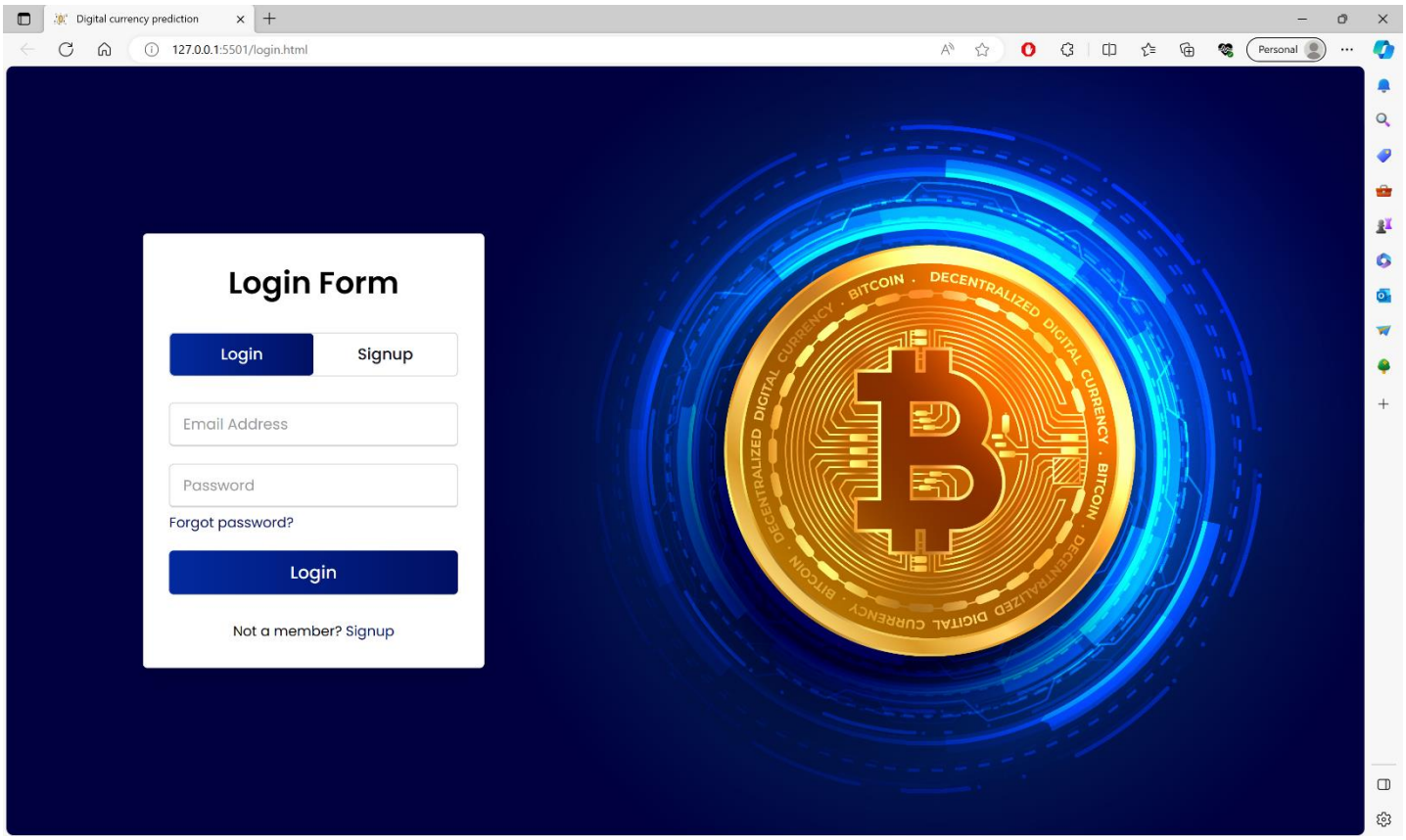
Login page:

```
<!DOCTYPE html>
<html lang="en" dir="ltr">
  <head>
    <meta charset="utf-8">
    <title>Digital currency prediction</title>
    <link rel="stylesheet" href="css/style1.css">
    <link href="img/future-cryptocurrency.webp" rel="icon">
    <meta name="viewport" content="width=device-width, initial-
scale=1.0">
  </head>
  <body>
    <div class="wrapper" style="margin-right: 850px;">
      <div class="title-text">
        <div class="title login">Login Form</div>
        <div class="title signup">Signup Form</div>
      </div>
      <div class="form-container">
        <div class="slide-controls">
          <input type="radio" name="slide" id="login" checked>
          <input type="radio" name="slide" id="signup">
          <label for="login" class="slide login">Login</label>
          <label for="signup" class="slide signup">Signup</label>
          <div class="slider-tab"></div>
        </div>
        <div class="form-inner">
          <form action="stu.html" class="login">
            <div class="field">
              <input type="text" placeholder="Email Address" required>
            </div>
            <div class="field">
              <input type="password" placeholder="Password" required>
            </div>
            <div class="pass-link"><a href="#">Forgot
password?</a></div>
```

```
          <div class="field btn">
            <div class="btn-layer"></div>
            <!-- <a style="color: white; text-align: cen-ter;"
href="index.html">Login</a> -->
            <input type="submit" value="Login">

          </div>
          <div class="signup-link">Not a member? <a
href="">Signup</a></div>
        </form>
        <form action="login.html" class="signup">
          <div class="field">
            <input type="text" placeholder="Email Address" required>
          </div>
          <div class="field">
            <input type="password" placeholder="Password" required>
          </div>
          <div class="field">
            <input type="password" placeholder="Confirm password"
required>
          </div>
          <div class="field btn">
            <div class="btn-layer"></div>
            <input type="submit" value="Signup">
          </div>
        </form>
      </div>
    </div>
  </div>

  <script>
    const loginText = document.querySelector(".title-text .login");
    const loginForm = document.querySelector("form.login");
    const loginBtn = document.querySelector("label.login");
    const signupBtn = document.querySelector("label.signup");
    const signupLink = document.querySelector("form .signup-link
a");
```

```
    signupBtn.onclick = (()=>{
      loginForm.style.marginLeft = "-50%";
      loginText.style.marginLeft = "-50%";
    });
    loginBtn.onclick = (()=>{
      loginForm.style.marginLeft = "0%";
      loginText.style.marginLeft = "0%";
    });
    signupLink.onclick = (()=>{
      signupBtn.click();
      return false;
    });
  </script>

 </body>
</html>
```

Output:


Digital currency prediction
127.0.0.1:5501/login.html
Personal
Login Form
Login
Signup
Email Address
Password
Forgot password?
Login
Not a member? Signup
DECENTRALIZED DIGITAL CURRENCY · BITCOIN ·

OUTPUT:

HISTORICAL DATA:

BITCOIN

	Date	Open	High	Low	Close	Adj Close	Volume
0	2014-09-17	465.864014	468.174011	452.421997	457.334015	457.334015	21056800
1	2014-09-18	456.859985	456.859985	413.104004	424.440002	424.440002	34483200
2	2014-09-19	424.102997	427.834991	384.532013	394.795990	394.795990	37919700
3	2014-09-20	394.673004	423.295990	389.882996	408.903992	408.903992	36863600
4	2014-09-21	408.084991	412.425995	393.181000	398.821014	398.821014	26580100
...	...	...	...	...	...	...	...
3268	2023-08-29	26102.486328	28089.337891	25912.628906	27727.392578	27727.392578	29368391712
3269	2023-08-30	27726.083984	27760.160156	27069.207031	27297.265625	27297.265625	16343655235
3270	2023-08-31	27301.929688	27456.078125	25752.929688	25931.472656	25931.472656	20181001451
3271	2023-09-01	25934.021484	26125.869141	25362.609375	25800.724609	25800.724609	17202862221
3272	2023-09-02	25800.910156	25970.285156	25753.093750	25868.798828	25868.798828	10100387473

```
Close          1.000000
Adj Close      1.000000
High           0.999459
Low            0.999362
Open           0.998798
Date           0.750830
Volume         0.695162
Name: Close, dtype: float64
```

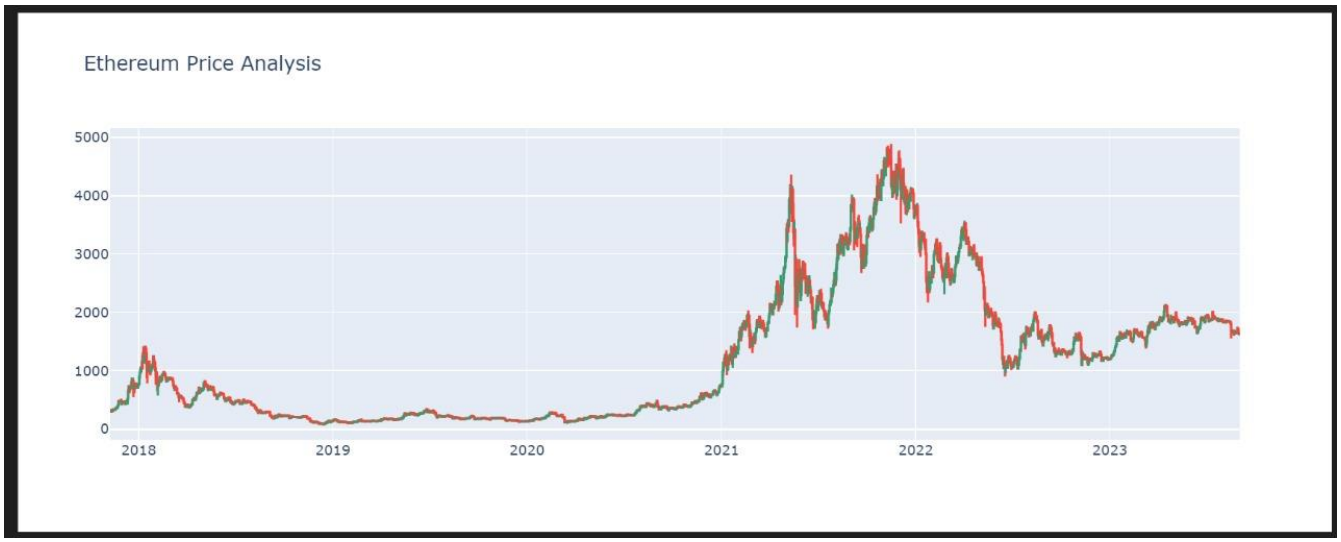

Bitcoin Price Analysis
70k
60k
50k
40k
30k
20k
10k
0
2015
2016
2017
2018
2019
2020
2021
2022
2023

	Close
2023-09-03	25869.571130
2023-09-04	25870.343432
2023-09-05	25871.115733
2023-09-06	25871.888035
2023-09-07	25872.660337
2023-09-08	25868.798828
2023-09-09	25868.798828
2023-09-10	25868.798828
2023-09-11	25868.798828
2023-09-12	25868.798828
2023-09-13	25868.798828
2023-09-14	25868.798828
2023-09-15	25868.798828
2023-09-16	25868.798828
2023-09-17	25868.798828
2023-09-18	25868.798828
2023-09-19	25868.798828
2023-09-20	25868.798828
2023-09-21	25868.798828

2024-08-14	26136.787545
2024-08-15	26137.559847
2024-08-16	26138.332149
2024-08-17	26139.104450
2024-08-18	26139.876752
2024-08-19	26140.649054
2024-08-20	26141.421356
2024-08-21	26142.193657
2024-08-22	26142.965959
2024-08-23	26143.738261
2024-08-24	26144.510563
2024-08-25	26145.282865
2024-08-26	26146.055166
2024-08-27	26146.827468
2024-08-28	26147.599770
2024-08-29	26148.372072
2024-08-30	26149.144373
2024-08-31	26149.916675
2024-09-01	26150.688977

ETHERIUMCOIN

	Date	Open	High	Low	Close	Adj Close	Volume
0	2017-11-09	308.644989	329.451996	307.056000	320.884003	320.884003	893249984
1	2017-11-10	320.670990	324.717987	294.541992	299.252991	299.252991	885985984
2	2017-11-11	298.585999	319.453003	298.191986	314.681000	314.681000	842300992
3	2017-11-12	314.690002	319.153015	298.513000	307.907990	307.907990	1613479936
4	2017-11-13	307.024994	328.415009	307.024994	316.716003	316.716003	1041889984
...	...	...	...	...	...	...	...
2119	2023-08-29	1652.274170	1742.637329	1639.576172	1729.725708	1729.725708	11304916729
2120	2023-08-30	1729.676636	1730.564697	1697.147217	1705.112183	1705.112183	5023904190
2121	2023-08-31	1705.364502	1720.011963	1634.850952	1645.639160	1645.639160	6593153505
2122	2023-09-01	1645.581299	1653.531738	1603.034180	1628.491211	1628.491211	6104510092
2123	2023-09-02	1628.559692	1644.030640	1627.976074	1637.025391	1637.025391	2943590996


Ethereum Price Analysis
5000
4000
3000
2000
1000
0
2018
2019
2020
2021
2022
2023

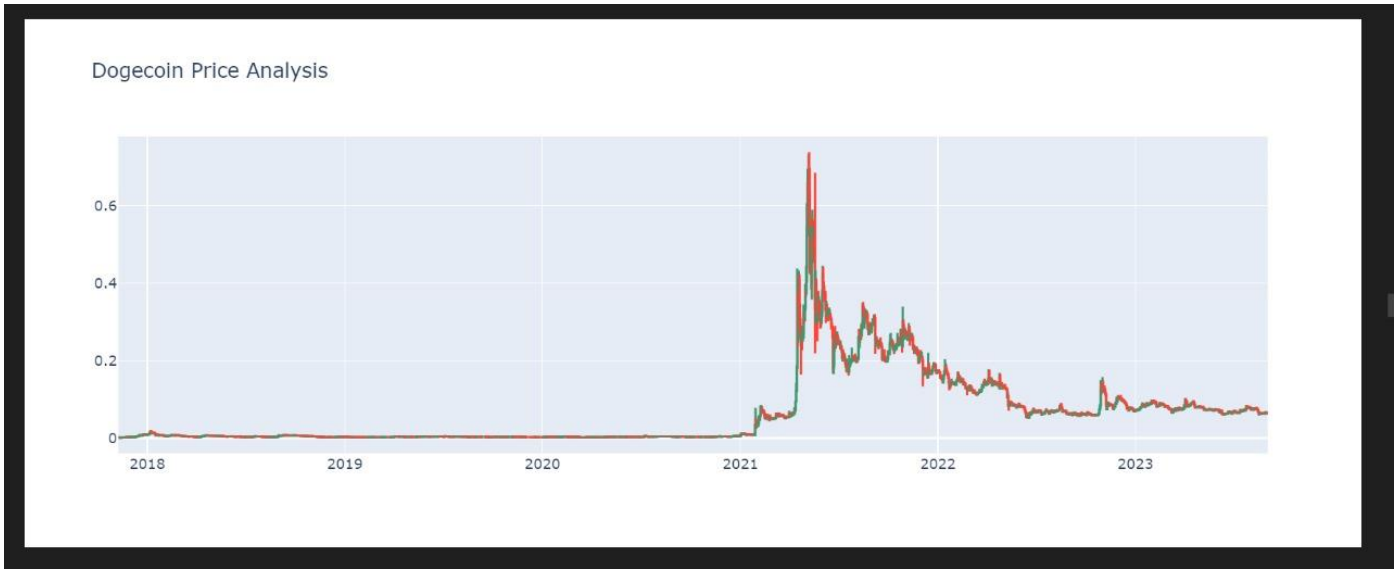
	Close
2023-09-03	1.645359e+03
2023-09-04	1.653846e+03
2023-09-05	1.664996e+03
2023-09-06	1.681588e+03
2023-09-07	1.704640e+03
2023-09-08	1.741109e+03
2023-09-09	1.799975e+03
2023-09-10	1.890353e+03
2023-09-11	2.027471e+03
2023-09-12	2.237389e+03
2023-09-13	2.559683e+03
2023-09-14	3.052249e+03
2023-09-15	3.809173e+03
2023-09-16	4.973367e+03
2023-09-17	6.759648e+03
2023-09-18	9.498810e+03
2023-09-19	1.370040e+04
2023-09-20	2.014552e+04

2024-08-16	5.412345e+65
2024-08-17	8.300060e+65
2024-08-18	1.272849e+66
2024-08-19	1.951968e+66
2024-08-20	2.993425e+66
2024-08-21	4.590544e+66
2024-08-22	7.039793e+66
2024-08-23	1.079582e+67
2024-08-24	1.655584e+67
2024-08-25	2.538909e+67
2024-08-26	3.893523e+67
2024-08-27	5.970882e+67
2024-08-28	9.156600e+67
2024-08-29	1.404203e+68
2024-08-30	2.153405e+68
2024-08-31	3.302337e+68
2024-09-01	5.064273e+68

DOGECOIN

	Date	Open	High	Low	Close	Adj Close	Volume
0	2017-11-09	0.001207	0.001415	0.001181	0.001415	0.001415	6259550
1	2017-11-10	0.001421	0.001431	0.001125	0.001163	0.001163	4246520
2	2017-11-11	0.001146	0.001257	0.001141	0.001201	0.001201	2231080
3	2017-11-12	0.001189	0.001210	0.001002	0.001038	0.001038	3288960
4	2017-11-13	0.001046	0.001212	0.001019	0.001211	0.001211	2481270
...	...	...	...	...	...	...	...
2119	2023-08-29	0.063434	0.068065	0.062542	0.066390	0.066390	445903123
2120	2023-08-30	0.066394	0.066438	0.064675	0.065838	0.065838	260654192
2121	2023-08-31	0.065841	0.066920	0.063085	0.063785	0.063785	336593454
2122	2023-09-01	0.063787	0.064130	0.062595	0.063849	0.063849	238777563
2123	2023-09-02	0.063855	0.064658	0.062961	0.063494	0.063494	208019339

[2124 rows x 7 columns]


Dogecoin Price Analysis
0.6
0.4
0.2
0
2018
2019
2020
2021
2022
2023

	Close
2023-09-03	0.064973
2023-09-04	0.064693
2023-09-05	0.064767
2023-09-06	0.064637
2023-09-07	0.064608
2023-09-08	0.064899
2023-09-09	0.064726
2023-09-10	0.064600
2023-09-11	0.064329
2023-09-12	0.064172
2023-09-13	0.064002
2023-09-14	0.063897
2023-09-15	0.064099
2023-09-16	0.063985
2023-09-17	0.063915
2023-09-18	0.063659
2023-09-19	0.063567
2023-09-20	0.063454

2024-08-13	0.063219
2024-08-14	0.063182
2024-08-15	0.063133
2024-08-16	0.063432
2024-08-17	0.063399
2024-08-18	0.063388
2024-08-19	0.063212
2024-08-20	0.063217
2024-08-21	0.063187
2024-08-22	0.063134
2024-08-23	0.063440
2024-08-24	0.063403
2024-08-25	0.063399
2024-08-26	0.063219
2024-08-27	0.063231
2024-08-28	0.063197
2024-08-29	0.063150
2024-08-30	0.063452
2024-08-31	0.063422
2024-09-01	0.063414

Conclusion:

This project aimed to provide analysis of cryptocurrency use in general. Our empirical research found that the future of digital currencies could be bright. The use of digital currency uses in facilitating trade, cost reduction. Buying and selling result in a change in the price of any digital currency, but buying and selling trends depend on many factors. Using machine learning for digital currency price prediction can only work in situations where prices change due to historical prices that people see before buying and selling their cryptocurrency.