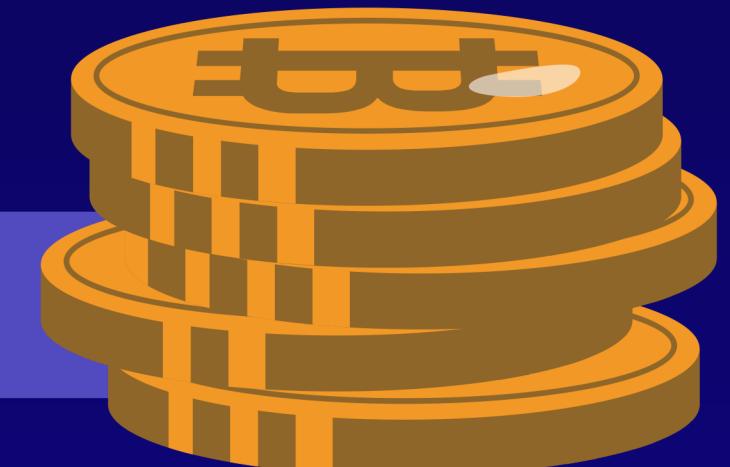


# BitPredictor

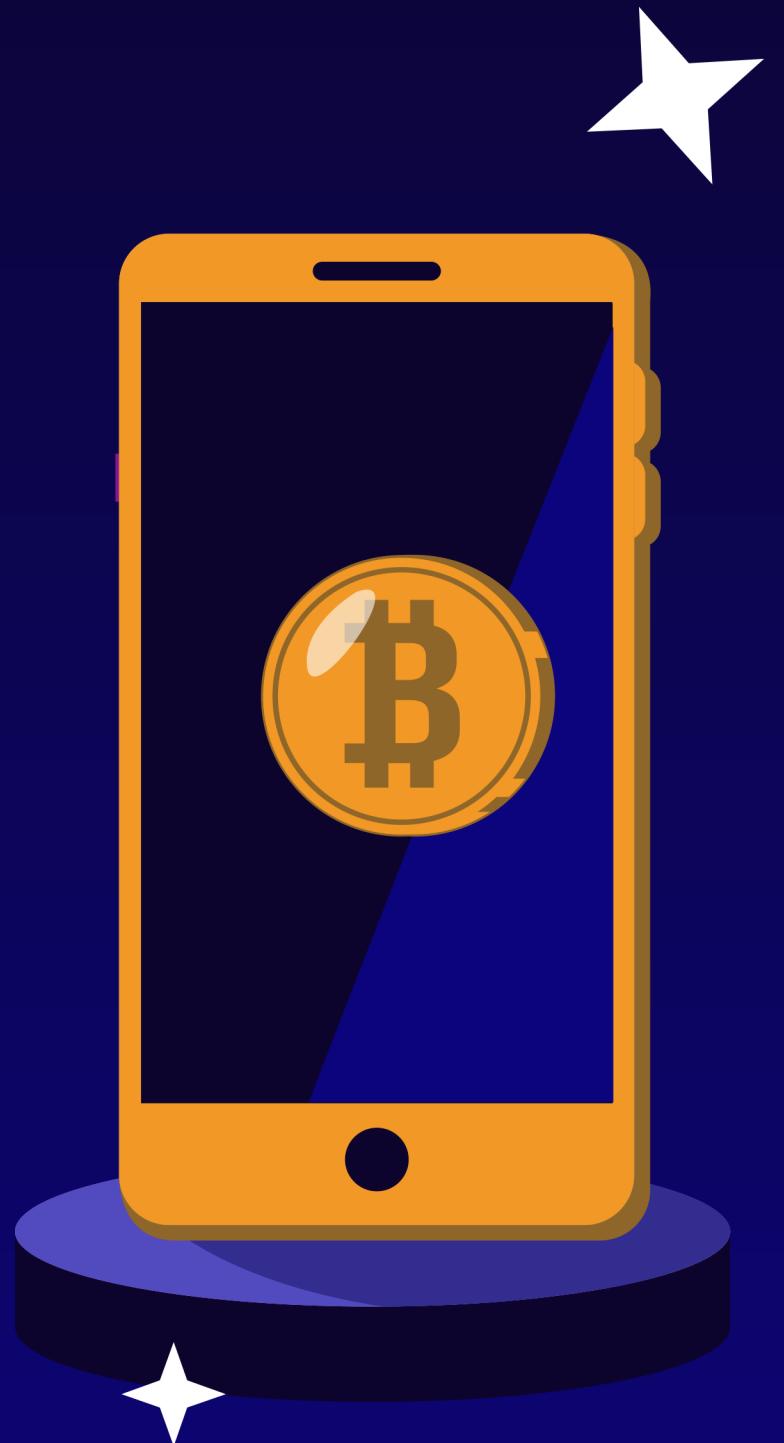
Empowering Investments With Machine Learning

Bitcoin Cost Forecast System by GROUP 5



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# What is Bitcoin?

- Form of digital currency
- Eliminate the need for central authorities
- Uses Blockchain technology
- Transactions are authenticated



# Problem Statement

- Bitcoin price is an important factor
- Low bitcoin price – No need to invest
- Bitcoin price fluctuate by a high percentage



# Bitcoin Price Variation



Source: [Bitcoin Price History 2009-2023: Start to All-Time-High | SoFi](#)



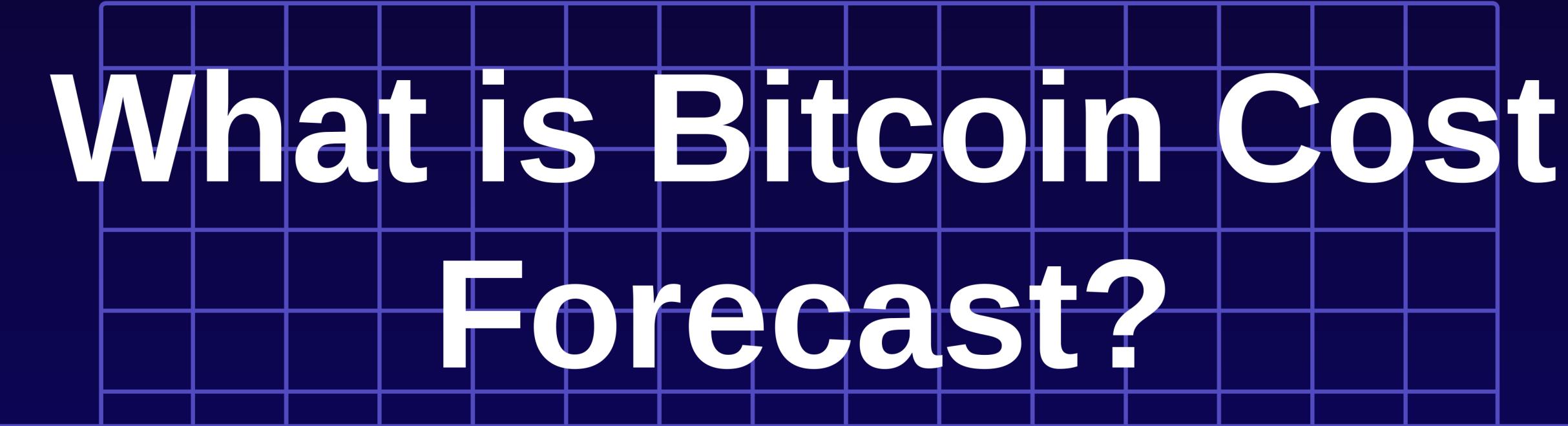
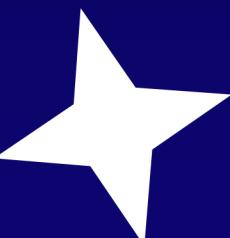
# Objectives

- To forecast bitcoin price accurately
- To provide valuable insights for investment and market trends





# What is Bitcoin Cost Forecast?

- A supervised learning problem
  - A regression problem
- 
- 
- 



# Data Collection

Yahoo Finance : [Bitcoin USD \(BTC-USD\) Stock Historical Prices & Data - Yahoo Finance](#)





# Data Preprocessing

# Handling Missing Values

- Identify Missing Values
- Count Missing Values
- Get Rid of Missing Values



# Outlier Detection

- Z-score Method
- Interquartile Range (IQR) Method



# Feature Engineering

- Technical Indicators
- Volatility
- Time Features

# Dimensionality Reduction

- To Reduce Computational Complexity
- To Avoid Overfitting
- To Improve Interpretability



# Data Splitting

- Split Data Into Test & Training Sets
- Walk-Forward Validation is used

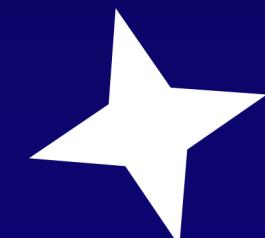




# EDA Plan

# Data Visualization

- Time Series Plot
- Histogram
- Scatter Plot
- Heatmap



# Summary Statistic

- Understanding the data
- Data Cleaning
- Choosing the Right Model
- Feature Scalinng



# Correlation Analysis

- To understand the relationship between Bitcoin price and other variables
- Ex: Trading Volume Vs Bitcoin Closing Price

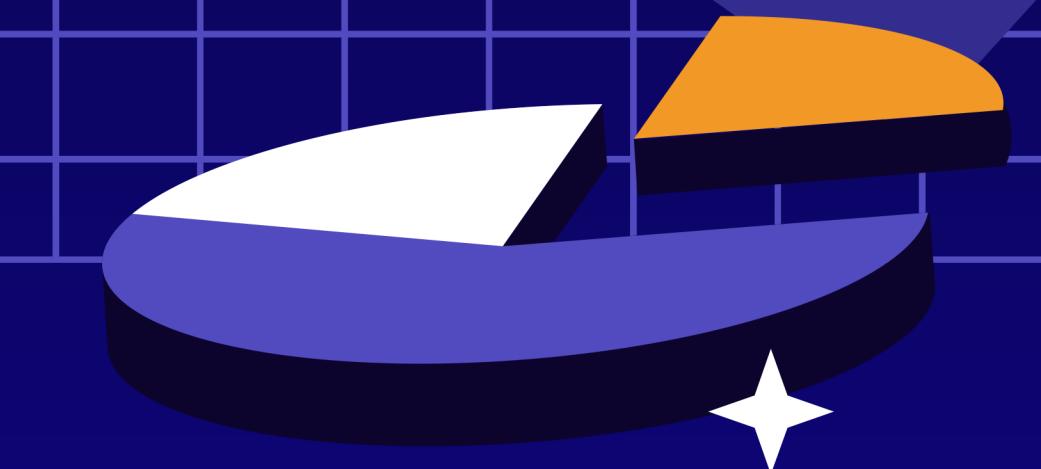


# Trend Analysis

- To understand how Bitcoin prices have changed over time
- Ex: Bitcoin Price at the end of the quarter



# Machine Learning Techniques



- \* ARIMA(0, 1, 0)



- \* Time Varying SSM

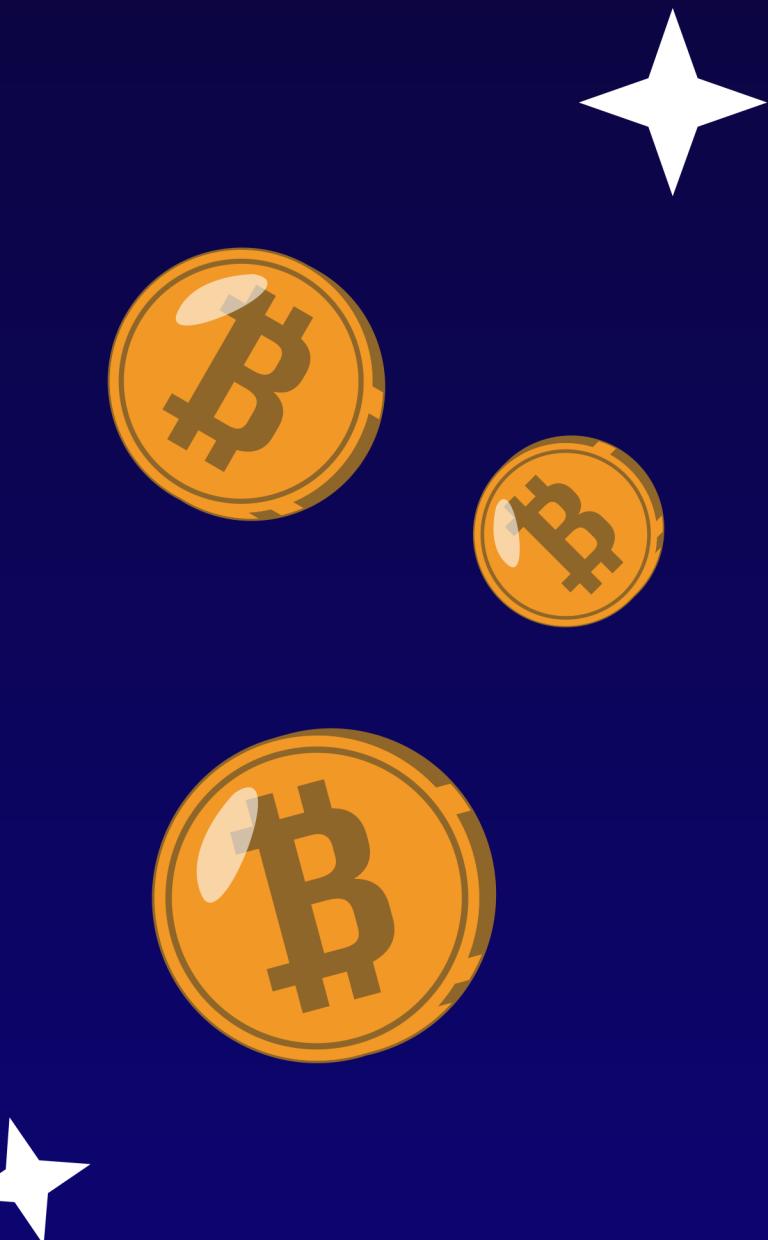


- \* Multivariate LSTM model

- \* Random Forest with High Explanations

- \* SVM with High Dimensional Features

- \* Stochastic Neural Network



# Performance Matrices

- RMSE
- MAE
- R-squared
- MAPE



# Timeline



**Week 5- 8**



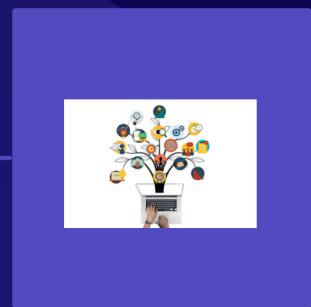
Data Collection &  
Preprocessing with  
EDA

Model Development



**Week 9 - 10**

**Week 11 - 12**



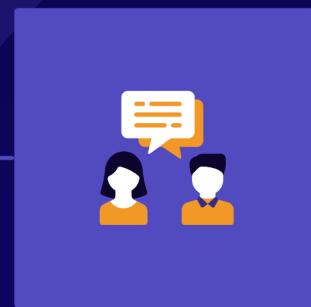
Model Evaluation and  
Selection

Model Deployment



**Week 12 - 13**

**Future**



Monitoring &  
Maintenance

Milestone 2 - Week 9

Milestone 3 - Week 14



# Contribution



Name	Contribution			
Pasan	Handling Missing Values	Data Visualization - Time Series Plots, Histograms	ARIMA Model Development & Evaluation	Model Deployment - Infrastructure Setup
Mewan	Outlier Detection	Data Visualisation - Scatter Plots, Heatmaps	Time Varying SSM Model Development & Evaluation	Model Deployment - Infrastructure Setup
Wishula	Feature Engineering	Summary Statistics	Multivariate LSTM Model Development, Schocastic NN Model Development & Evaluation	Model Deployment - Deployment Automation
Jeewajith	Data Spliting	Correlation Analysis	Random Forest Model Development & Evaluation	Model Deployment - Deployment Automation
Sajith	Dimensionality Reduction	Trend Analysis	SVM Model Development & Evaluation	Model Deployment - Deployment Automation



# Our Team



Dissanayake P.A.M.  
E/19/091



Galappaththi M.D.  
E/19/111



Jayathunga W.W.K.  
E/19/166



Madhushanka M.P.J.  
E/19/227



Pushpakumara R.M.S.P.  
E/19/304



Data Preprocessing & EDA - [https://github.com/cepdnack/e19-CO544-Bitcoin-Cost-Forecast-System/blob/main/Bitcoin Price Prediction System.ipynb](https://github.com/cepdnack/e19-CO544-Bitcoin-Cost-Forecast-System/blob/main/Bitcoin%20Price%20Prediction%20System.ipynb)

Github Repository - <https://github.com/cepdnack/e19-CO544-Bitcoin-Cost-Forecast-System>





Thank  
You!

Any questions?

