**Project Design Phase-I**

**Solution Architecture**

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| Date : 1 November 2023 |
| Team ID : 591944 |
| Project Name : Time Series Analysis For Bitcoin Price Prediction Using Prophet |
| Maximum Marks : 4 Marks |

**Solution Architecture:**

1. \*\*Data Collection and Integration:\*\*

- Historical Bitcoin Price Data: Retrieve historical price data from trusted cryptocurrency exchanges, APIs, and blockchain data sources.

- Real-time Data Feed: Implement real-time data feeds to continuously update the historical dataset.

2. \*\*Data Preprocessing:\*\*

- Data Cleaning and Transformation: Clean and transform raw data, handle missing values, and address data quality issues.

- Feature Engineering: Create relevant features such as moving averages, volatility indicators, and sentiment scores.

3. \*\*Prophet Forecasting Model:\*\*

- Model Training: Train the Prophet forecasting model using historical data, considering daily, weekly, and yearly seasonality, and holidays.

- Hyperparameter Tuning: Optimize model hyperparameters for improved accuracy.

4. \*\*Prediction Engine:\*\*

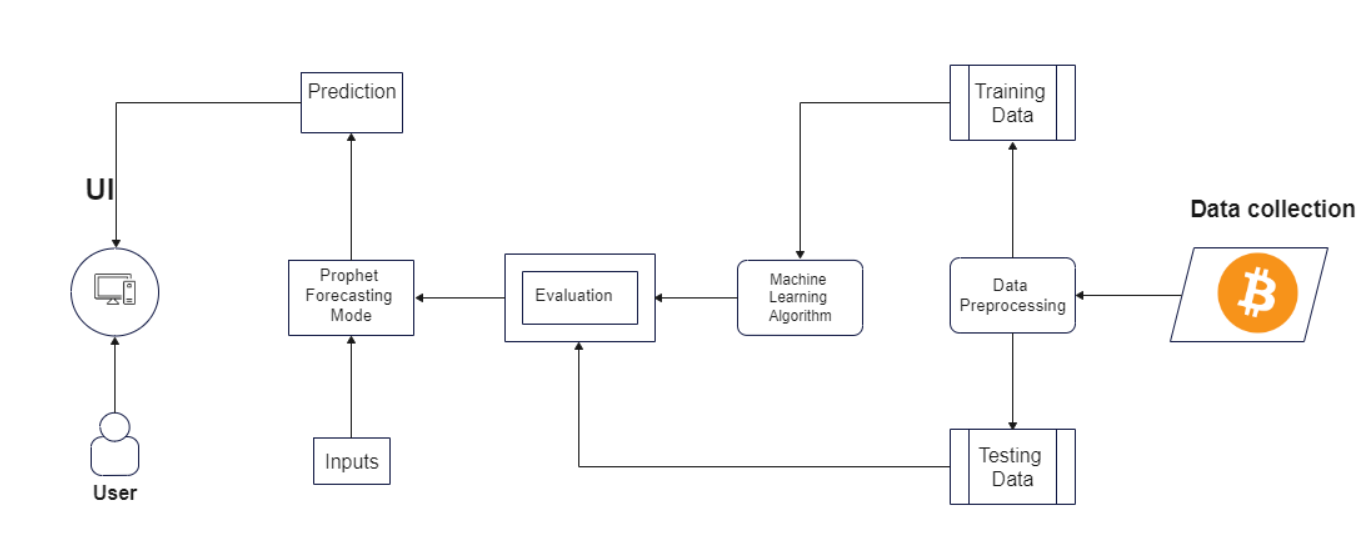
- Real-time Prediction: Implement a prediction engine that continually updates Bitcoin price forecasts based on the latest data.

5. \*\*User Interface (UI):\*\*

- User Dashboard: Develop a user-friendly web interface for users to access predictions, historical data, and visualization tools.

- Personalized Alerts: Allow users to set price threshold alerts and receive notifications.

**Solution Architecture Diagram**

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