Final Report : Cryptocurrency Liquidity Prediction for Market Stability

1. **Project Overview:**

   In this project, we worked on predicting the liquidity of cryptocurrencies to help understand market stability. We collected two days of data from **CoinGecko** (March 16 and March 17, 2022), including features like:

   - Price
   - 24-hour volume
   - Market Capitalization
   - Returns

2. **Data Preprocessing and Feature Engineering:**

   After cleaning the data by removing missing values and duplicates, we created new features such as:

   - 2-day moving averages for price and market capitalization.
   - Volatility
   - Liquidity Ratio

3. **Exploratory Data Analysis (EDA):**

   To better understand the dataset, we performed the following EDA tasks:

   - Plotted Bitcoin's price over time
   - Created a correlation heatmap to find relationships between features
   - Analyzed summary statistics to understand the spread and distribution of data

4. **Model Building and Evaluation:**

   We tested multiple machine learning models for predicting liquidity:

   - Linear Regression: Initially used, but the performance was poor.
   - Random Forest Regressor:
     - ➢ Trained with hyperparameter tuning
     - ➢ Achieved a strong R2 score of 0.87, indicating high predictive accuracy

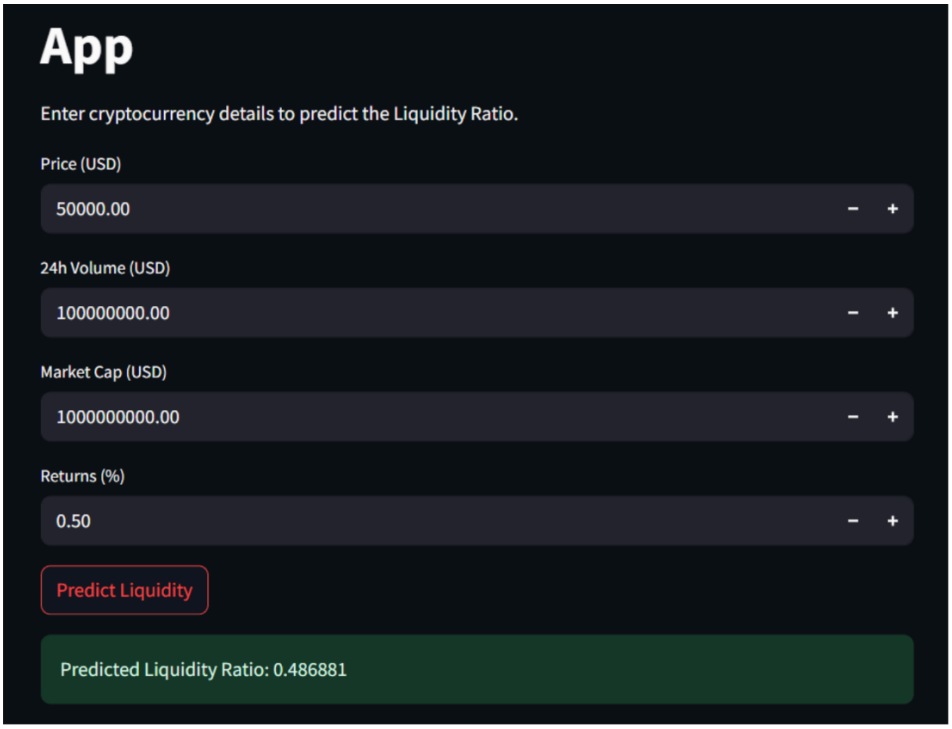
5. **Model Deployment**

   The trained model was saved using **Joblin** for future use and deployment.

6. Conclusion

This project demonstrates that machine learning models can effectively predict cryptocurrency liquidity, which is crucial for maintaining financial market stability.

Also, To make the model accessible, local deployment testing was conducted using **Streamlit and Ngrok**, allowing real-time predictions for custom inputs.


App
Enter cryptocurrency details to predict the Liquidity Ratio.
Price (USD)
50000.00
24h Volume (USD)
100000000.00
Market Cap (USD)
1000000000.00
Returns (%)
0.50
Predict Liquidity
Predicted Liquidity Ratio: 0.486881