

High Level Design (HLD)

Cryptocurrency Volatility Prediction

Overview

This system predicts cryptocurrency market volatility using historical price and volume data. The goal is to assist traders and analysts in understanding market risk and volatility trends.

System Components

1. Data Source
 - a. Historical OHLC, volume, and market capitalization data (CSV)
2. Data Processing
 - a. Missing value handling
 - b. Feature engineering (volatility, liquidity, moving averages)
3. Machine Learning Model
 - a. RandomForestRegressor for volatility prediction
4. Evaluation
 - a. MAE, RMSE, R² metrics
5. Model Storage
 - a. Trained model and scaler saved using joblib

Output

- Predicted volatility values
- Evaluation metrics