

# 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,  $R^2$  metrics
5. Model Storage
  - a. Trained model and scaler saved using joblib

### Output

- Predicted volatility values
- Evaluation metrics