# High-Level Design (HLD)

## System Overview

This system predicts cryptocurrency volatility based on historical market data using a machine learning model. It helps traders and institutions to assess market risk and make informed decisions.

## Architecture Components

1. Data Collection: Load historical OHLC, volume, and market cap data.  
2. Data Preprocessing: Clean and normalize numerical values.  
3. Feature Engineering: Create features like daily return, rolling volatility, and liquidity ratio.  
4. Model Training: Use machine learning algorithms like Random Forest.  
5. Model Evaluation: Evaluate the model using RMSE, MAE, and R² metrics.  
6. Deployment (Optional): Streamlit interface for real-time predictions.

## Data Flow

Input Data → Preprocessing → Feature Engineering → Model Training → Evaluation → Prediction