# Low-Level Design (LLD)

## Module Breakdown

1. load\_data(): Reads CSV data into a Pandas DataFrame.  
2. preprocess\_data(): Handles missing values and sorts the data by date.  
3. feature\_engineer(): Creates new features like daily return, rolling volatility, liquidity ratio.  
4. train\_model(): Fits a machine learning model (Random Forest).  
5. evaluate\_model(): Computes evaluation metrics.  
6. predict(): Predicts volatility using the trained model.

## Model Details

Model Used: RandomForestRegressor  
Hyperparameters: Default (can be tuned using GridSearchCV)  
Target: Next-day rolling volatility (7-day standard deviation of returns)

## Libraries Used

Pandas, NumPy, Scikit-learn, Matplotlib, Seaborn