Low-Level Design (LLD): Crypto Liquidity Prediction

Data Schema:

- coin (str), price (float), 1h/24h/7d change (float), volume_24h (float), mkt_cap (float), date (datetime)

Feature Engineering:

- liquidity_ratio = 24h_volume / mkt_cap
- volatility = abs(24h_change)

Model:

- RandomForestRegressor
- Hyperparameters tuned using GridSearchCV
- Evaluation using R^2 and RMSE

Flask API:

- /predict: Accepts JSON with input features
- Loads .pkl model and returns prediction

Streamlit App:

- Dropdown to select coin
- Uses CoinGecko API to fetch live data
- Calls model and displays predicted ratio with metrics

Model File:

- Stored as crypto_liquidity_model.pkl
- Load on API boot for fast inference