

CONCEPTUAL DIAGRAM FOR BACKTESTING LIBRARY

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1 Data Collection and Preprocessing

- Data Sources:
 1. CryptoQuant-market inflow
 2. Glassnode-On-Chain Metrics
 3. Coinglass-Price data
- Merge all datasets by timestamps
- Clean the data
- Create new features

2 Hidden Markov Model (HMM)

- Identifies hidden market states (Bullish or Bearish)
- Input: Market returns, Inflow data
- Output: Predicted market regime (bull or bear)

3 Strategies/Algorithm

- Z-Score: Identifies extreme market conditions
- Recent Return: Detects momentum in the market
- ATR: Sets dynamic stop-loss levels based on market volatility
- Trade Signals:
 - Bull Market: Buy signal when conditions align
- Bear Market: Sell signal when conditions align

4 Backtesting the Strategy

- Key Features:
 - Start with \$100,000
- Simulate Trades: Using historical data to test the strategy
- Go long or short based on signals
- When we enter or exit a trade, apply a 0.06% trading fee
- Equity Curve: Shows how your account would have grown or shrunk with this strategy

5 Evaluating Performance

- After running the backtest, we check how good the strategy is by looking at performance metrics:
 1. Sharped ratio(≥ 1.8)
 2. Max Drawdown($\leq 40\%$)
 3. Trade Frequency($\geq 3\%$)