Project Proposal
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Backtesting Quantitative Trading Strategy on Digital Currencies
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Description

This project aims to backtest mean-reversion and momentum strategies on digital currency market. Price/time data will be transformed into technical and quantitative indicators, for instance, Moving Average (MA), Relative Strength Index (RSI), Moving Average Convergence Divergence (MACD) and Volume Weighted Average Price (VWAP) to generate buy/sell signals. Bet size is not determined yet but we will consider Kelly's criterion and Martingale.

Our target asset class is digital currency due to its popularity and high volatility. We will mainly focus on Bitcoin (BTC) and Ethereum (ETH) because of their market depth and relatively long trading history compared with other newly established digital currencies.

Data Collection

We expect to collect Open. High, Low, Close data from Bloomberg terminal. The price data will be collected on fixed time interval, and 1/3/5-minute data (or shorter interval if available) will be used for mean-reversion and longer intervals like 30-minute, 1-hour, day or week data will be used for momentum strategy.

Fundamental data such as macro-economic data may also be utilized as a side indicator if applicable.

Object-Oriented Programming

This project will be done in C++ in an object-oriented way. We will create a base class called strategy and derived class momentum and mean-reversion inheriting the bass class.

Potential Limitations

Our model does not include order book data (bid/ask spread) and ignores transaction cost such as brokerage fee, which may cause deviation between the actual strategy performance in real-world trading and the backtesting result.