10) Algorithmic Trading Strategies

Any strategy for algorithmic trading requires an identified opportunity which is profitable in terms of improved earnings or cost reduction. The following are common trading strategies used in algo-trading:

1) Trend Following Strategies:

The most common algorithmic trading strategies follow trends in moving averages, channel breakouts, price level movements and related technical indicators. These are the easiest and simplest strategies to implement through algorithmic trading because these strategies do not involve making any predictions or price forecasts.

Trades are initiated based on the occurrence of desirable trends, which are easy and straightforward to implement through algorithms without getting into the complexity of predictive analysis. The above mentioned example of 50 and 200 day moving average is a popular trend following strategy.

2) Arbitrage Opportunities:

Buying a dual listed stock at a lower price in one market and simultaneously selling it at a higher price in another market offers the price differential as risk-free profit or arbitrage. The same operation can be replicated for stocks versus futures instruments, as price differentials do exists from time to time. Implementing an algorithm to identify such price differentials and placing the orders allows profitable opportunities in efficient manner.

3) Index Fund Rebalancing:

Index funds have defined periods of rebalancing to bring their holdings to par with their respective benchmark indices. This creates profitable opportunities for algorithmic traders, who capitalize on expected trades that offer 20-80 basis points profits depending upon the number of stocks in the index fund, just prior to index fund rebalancing. Such trades are initiated via algorithmic trading systems for timely execution and best prices.

4) Mathematical Model Based Strategies:

A lot of proven mathematical models, like the delta-neutral trading strategy, which allow trading on combination of options and its underlying security, where trades are placed to offset positive and negative deltas so that the portfolio delta is maintained at zero.

5) Trading Range (Mean Reversion):
Mean reversion strategy is based on the idea that the high and low prices of an asset are a temporary phenomenon that revert to their mean value periodically. Identifying and defining a price range and implementing algorithm based on that allows trades to be placed automatically when price of asset breaks in and out of its defined range.

6) **Volume Weighted Average Price (VWAP):**

Volume weighted average price strategy breaks up a large order and releases dynamically determined smaller chunks of the order to the market using stock specific historical volume profiles. The aim is to execute the order close to the Volume Weighted Average Price (VWAP), thereby benefiting on average price.

7) **Time Weighted Average Price (TWAP):**

Time weighted average price strategy breaks up a large order and releases dynamically determined smaller chunks of the order to the market using evenly divided time slots between a start and end time. The aim is to execute the order close to the average price between the start and end times, thereby minimizing market impact.

8) **Percentage of Volume (POV):**

Until the trade order is fully filled, this algorithm continues sending partial orders, according to the defined participation ratio and according to the volume traded in the markets. The related "steps strategy" sends orders at a user-defined percentage of market volumes and increases or decreases this participation rate when the stock price reaches user-defined levels.

9) **Implementation Shortfall:**

The implementation shortfall strategy aims at minimizing the execution cost of an order by trading off the real-time market, thereby saving on the cost of the order and benefiting from the opportunity cost of delayed execution. The strategy will increase the targeted participation rate when the stock price moves favorably and decrease it when the stock price moves adversely.

10) **Beyond the Usual Trading Algorithms:**

There are a few special classes of algorithms that attempt to identify “happenings” on the other side. These "sniffing algorithms," used, for example, by a sell side market maker have the in-built intelligence to identify the existence of any algorithms on the buy side of a large order.
Such detection through algorithms will help the market maker identify large order opportunities and enable him to benefit by filling the orders at a higher price. This is sometimes identified as high-tech front-running.