**To learn**

lagrange multipliers

PCA

**Correlation**

It is of no use if we have 20 different coins in our universe but they all produce the same signals. In that case, the most optimal solution would be to trade only one coin. What we want is that our individual signals display a low correlation, providing us with a diversified return profile and a smoother, more consistent equity curve

**Strategies**

arbitrage bots, coin lending bots, margin trading or leverage bots, and market maker bots

Swing trading

Trying to profit from price fluctuations that occur over a short or medium term such as a few days or weeks. Given the inherent volatility of cryptocurrencies, the use of swing trading bots has proven to be an attractive, though difficult to master, strategy for many traders.

Swing traders make use of technical indicators, which are either leading or lagging. Examples of momentum indicators include Relative Strength Index (RSI), Stochastic Oscillator, and On-balance volume (OBV), while Moving Average Convergence Divergence (MACD) and Bollinger Bands (BB) are good examples of a trend indicator and volume indicator, respectively.

<https://www.trality.com/blog/best-indicators-for-swing-trading>

Day trading

Buying and selling of assets on the same day

Since day traders attempt to profit from volatility, the focus is on volume and liquidity, which is why technical analysis prevails (e.g. identifying entry and exit points for trades)

<https://www.trality.com/blog/day-trading-crypto>

Scalping

While day trading is one specific trading strategy, there are a number of subtypes, one of which is scalping.

Trend Following

Simplest trading strategy in which the bot responds to direct market changes.

Arbitrage

Exploiting the difference in prices between the numerous cryptocurrency exchanges

Market Making

Buy and sell high volumes of currency and profit from the spread

**Open Source code**

Freqtrade - <https://www.freqtrade.io/en/stable/>

magic8bot - <https://github.com/magic8bot/magic8bot>

Zenbot - <https://github.com/DeviaVir/zenbot>

Zalgo - <https://medium.com/@carlos8f_11468/introducing-bot18-the-new-crypto-trading-bot-to-supersede-zenbot-and-unleash-the-zalgo-da8464b41e53>

Gekko - <https://gekko.wizb.it/>

**Exchanges**

Pionex

Kucoin

Bybit

**Off-the-shelf trading bots**

Lux Algo

FOMO and FUD

RSI

enter 25-30% from the account

**Sharpe Ratio** — heuristically characterises the risk/reward ratio of the strategy. It quantifies the return you can accrue for the level of volatility undergone by the equity curve.

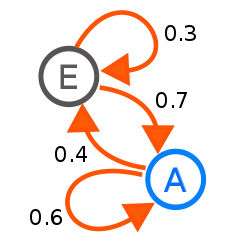
**Volatility** — quantifies the “risk” related to the strategy. The Sharpe ratio also embodies this characteristic. Higher volatility of an underlying asset often leads to higher risk in the equity curve and that results in smaller Sharpe ratios.

**Maximum Drawdown** — the largest overall peak-to-trough percentage drop on the equity curve of the strategy. Maximum drawdowns are often studied in conjunction with momentum strategies as they suffer from them. Learn to calculate it using the numpy library.

**Capacity/Liquidity** — determines the scalability of the strategy to further capital. Many funds and investment management firms suffer from these capacity issues when strategies increase in capital allocation.

**CAGR** — measures the average rate of a strategy’s growth over a period of time. It is calculated by the formula: (cumulative strategy returns)^(252/number of trading days) — 1

**Trend Following**For the trend-following strategy to be beneficial, the market returns must exhibit persistence in the short run. Put differently, the returns must display positive autocorrelation at short lags. Two examples of well-known return processes with short-term persistence are an ARMA family process and a Markov switching model

**Markov chain (Markov process)**- a stochastic process that satisfies the Markov property[1] (sometimes characterized as "memorylessness"). In simpler terms, it is a process for which predictions can be made regarding future outcomes based solely on its present state and—most importantly—such predictions are just as good as the ones that could be made knowing the process's full history.[12] In other words, conditional on the present state of the system, its future and past states are independent.  
- a stochastic model describing a sequence of possible events in which the probability of each event depends only on the state attained in the previous event.  


Bayesian optimization

**Prior probability**- the probability distribution that would express one's beliefs about this quantity before some evidence is taken into account. For example, the prior could be the probability distribution representing the relative proportions of voters who will vote for a particular politician in a future election. The unknown quantity may be a parameter of the model or a latent variable rather than an observable variable.

**Markov chain Monte Carlo**- comprise a class of algorithms for sampling from a probability distribution. By constructing a Markov chain that has the desired distribution as its equilibrium distribution, one can obtain a sample of the desired distribution by recording states from the chain. The more steps that are included, the more closely the distribution of the sample matches the actual desired distribution  
- primarily used for calculating numerical approximations of multi-dimensional integrals

**Posterior probability**- a type of conditional probability that results from updating the prior probability with information summarized by the likelihood via an application of Bayes' rule  
- the posterior probability contains everything there is to know about an uncertain proposition (such as a scientific hypothesis, or parameter values), given prior knowledge and a mathematical model describing the observations available at a particular time.[2] After the arrival of new information, the current posterior probability may serve as the prior in another round of Bayesian updating

Bayes’ Rule

Gaussian Process

Kriging (Gaussian process regression)

Renko Charts

Average True Range (ATR)

