# A Quick Start-Up Guide

To run basic back-tests, here are a few steps that should get you up and running

* Install standard modules using pip – *yfinance* (check website for updated installation procedures), *pandas, datetime, numpy,* etc
* Within the Production folder, it is imperative that the user create a folder called “*Indicator\_CSVs*” (case-sensitive)
* While running the tests, navigate to the production directory, and run “tests.py” from command line only (do not run using the “run” command on standard code editors)
* It is useful to run the command – *python test.py* ***--update*** (--update is used whenever the data needs to be updated, for new runs, or after tweaks to the features. For newer users, it’s a good heuristic to always run the file in --update mode)
* The arguments in the Backtester class are the features in the model. These can be changed by the user. The argument - *current\_account\_size\_csv* allows the user to change the name of the generated file. This file can be formatted into excel, for further analysis.
* The trade logs are saved in a file called *backtest-results.txt*, which can be found in the Production folder.

# Introduction and Motivation

Investment/Rebalanced Portfolio type Funds and Trading Type Funds

The fund management sphere can be classified into two broad classifications based on the time period of holding positions.

1. **Rebalanced Portfolio funds** – where positions are held for a relatively long time, and most of the changes in the portfolio, may be triggered by a variety of factors, whether that be value/accounting metrics, macroeconomic trends, or anything else, in an endless spectrum of available financial data. Quant strategies in this sphere may include sector-beta, relative value strategies, or smart – beta type models that can be seen in ETFs.
2. **Trading Type Funds** – Position-hold times are generally shorter, and they tend to be opportunistic, as opposed to having a bias on the investment style. All trend following strategies are considered “Trading Type” strategies. Other quant strategies in the space, may be pairs trading, spread arbitrage, high-frequency trading, etc. The rest of the document, deals with quant strategies in the trend following space.

Trend Following

Trend following is the strategy where, instead of predicting future price moves, the system attempts to react after a price move, and hold on for the rest of the trend, until the trend has been proven to have “exhausted” itself. Entry and Exit logic may either be based on hard quantitative metrics, or qualitative ones. It must be noted that, the only prediction that is inbuilt into this methodology, is that a large price dislocation, or a protracted price move in certain direction indicates that the trend will continue to move in the same direction, enough for the systematic trader to profit from.

Trend following is suitable for investors who believe that the price of an asset is pricing all complex data. Therefore, Trend followers rarely use any data other than historical price data.

The implementation of these strategies in Industries are often very simplistic, and are rarely optimised for the best Absolute Returns or risk adjusted returns.

Turtle Traders

The Simplest Trend Trading Strategy was devised by Richard Dennis in the 1980s. His class of traders are popularly known as Turtle Traders.

More information about their system can be found here: [Turtle Trading System (definedge.com)](https://www.definedge.com/turtle-trading-system/)

The obvious caveats to this system, are that the system, cannot be optimised to fit any form of return distribution. While it may be useful to train a machine learning model on changing the lookback periods on the system variables, the return distribution rarely shows too much deviation. Furthermore, the simplicity of the system causes it to be rigid in terms of diversification.

Strongly enforced diversification is beneficial, but it disallows variable position sizing, and is far less opportunistic than an optimised model has the potential to be.

# Feature Indicator Types

Type of Data

Sourcing Indicators

Simplicity vs. Complexity

# Genesis of the Idea

Diversification and Concentrated Portfolio

Concentrated Trend Following

# Nature of Variables

The Family of Models

One Instance of a Model

Base Lookback

Multiplier1

Multiplier2

Linear Regression Filter Multiplier

Stop Loss Percentage

Training Period

Percent risk per Trade

# Project Branches

Tweaking the Basket – the Factor based Model as Basket Builders

Sentiment Data