Experiment:

***Flow of the Framework***

* *Two Rigorous Filters*
  + **Technical Filter**
    - First the list of 500 companeis will undergo a technical filter, which will try to indentify if the stock in question is witnessing a divergence breakout or not and whethere we are seeing a reversal or not.
    - To check for the divergence we have defined two windows, under which we will check whether the divergence is happening or not and whether there is a breakout or not.
  + **Fundamental Filte**r
    - Later, the rundown of these technical filtered companies will undergo a fundamental filter which will short list the companies on the basis of the metric we have selected
      * For this Experiments we are considering the following metrics.
      * *For Non-Financial Companies:*
        + Operating Profit Margin >= 5%
        + Cash flow from Operation > 0 (Should be positive)
        + Net Cash Flow > 0 (Should be positive)
        + Debt/ Total Asset < 40%
        + Other Income/Total revenue < 10%
        + Investment/ Total Assets < 20%
      * *For Financial Services Companies:*
        + Financing Margin > 12%
        + Net Profit > 0 (Should be Positive)
* *Hierarchical Risk Parity model*
  + Once we choose few companies, after running the Two rigorous filters, we take 1 year return of the companies and send them into our HRP model.
  + The HRP will return the allocation for the respective companies.
* *Investing*
* Once we get the allocation from the HRP model. We run a simulation and invest those stock for the period of 1 month, 2 month or 3 months.
* We record the returns for each of tests.

***Assumptions***

* Buying and selling of the stock at the closing price of the particular day
* No transactions cost applies when we are buying and aselling
* If there is only company which get filtered through fundemental filtering stage we won’t invest in that companies. There should be atleast companies to invest.

***Number of Test Performed***

* We considred total 4 year cycle starting from 30th April
  + For each year we have took 4 total (RSI/Breakout).
  + 'First':[40,10],
  + 'Second':[30,10],
  + 'Third':[40,20],
  + 'Fourth':[30,20]
* And for each window we are considering different investment period. i.e. 1 month, 2 month or 3 months.
* Thus, all in all we have conducted 4 Years x 4 Windows x 3 Investment Period = 48 Tests.

**Presenting Below the returns of each 12 tests conducted in each year.**

**Chart

Description automatically generated with medium confidenceChart, bar chart

Description automatically generatedGraphical user interface, application, Teams

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Description automatically generated**

**Observation**

* We can see that in the last three years, the framework has provided positive returns. However, for the year 2018-19 we can witness that out framework has provided negative returns.

Average returns of each test parameter for 4 cycle.

* Here we have taken the statistics for all the tests we have done in 4 cycle.
* There were 12 unique tests that were conducted in each cycle.
* Here we have tried to group the tests and we have calcuted the mean, standard deviation, minimum return, maximum return.
* We have also calculated coefficient of variance (CoV)(a relative measure of performance) which will help us identify the best Test Parameter.
  + The coefficient of variation is a measure of dispersion, the greater the CoV the greater the dispersion around.
* In our case greater the CoV, more deviation in returns for a particular test case.
* Thus we want a test parameter which gives the lowest CoV.
* Therefore we can see that the on an average **Test-4, which is 30 RSI Window, 10** Breakout and 1 month portfolio churning, is **giving the highest average return with lowest possible deviations**.