**FECignment #02**

Make a portfolio of your own. You need to calculate the weight assigned to each asset by optimization. The portfolio should consist of 5 or more stocks of your own choice. You can assume the constraints on your own, but do mention them.

1. How did you choose the stocks?
2. What is the impact of increasing the number of stocks in the portfolio?
3. Why are calculating the weights by optimization and not giving equal weightage to every stock?
4. Which optimization techniques are used by Mutual Funds currently?
5. Which parameters are you using to check the accuracy of your model?

For the data, take two years’ stock return to optimize your model and check the accuracy of your model by testing it on the data of the following year.

Example

01/04/2015-31/03/2017 use this data to calculate the weights

Use 01/04/2017-31/03/2018 data to test the accuracy

Deadline - 30th September 2021

Submission: Share the google colab file with [nilaykala1974@gmail.com](mailto:nilaykala1974@gmail.com)

**Reading materials:**

**Portfolio Theory**

* 5th Chapter of Capinski

<https://drive.google.com/drive/folders/15TUjxu4PPdWj_bfiSOBCvKHxKZZwdQ6x?usp=sharing>

* [Econ 133, Lecture 9 - Portfolio Optimization](https://youtu.be/Rz5tGZdyViw)

**Complete at least one** of the 2 above-mentioned resources

Topics to cover mainly (You may find some things directly, for other things you might need to search a bit)

(For revision purposes, just so that you know these terms)

* CAPM
* Beta factor
* Efficient Frontier
* Risk vs Reward
* Use of Variance as a risk measure
* Portfolio weights
* Optimization
* Sharpe Ratio, Jenson’s Alpha

MPT - <https://www.investopedia.com/terms/m/modernportfoliotheory.asp#:~:text=Modern%20portfolio%20theory%20(MPT)%20is,Journal%20of%20Finance%20in%201952.>

<https://www.thestreet.com/investing/modern-portfolio-theory-14903955>

CAPM - <https://www.wallstreetmojo.com/capital-asset-pricing-model-capm/>

<https://www.youtube.com/watch?v=-fCYZjNA7Ps>

Beta- <https://www.investopedia.com/terms/b/beta.asp>

<https://www.investopedia.com/investing/beta-know-risk/>

<https://corporatefinanceinstitute.com/resources/knowledge/valuation/what-is-beta-guide/>

Efficient Frontier - <https://www.investopedia.com/terms/e/efficientfrontier.asp#:~:text=The%20efficient%20frontier%20is%20the,for%20the%20level%20of%20risk.>

<https://investinganswers.com/dictionary/e/efficient-frontier>

Make your own portfolio using the concept you learned above.

<https://www.pythonforfinance.net/2017/01/21/investment-portfolio-optimisation-with-python/>

We can also do it in excel but python is much more powerful

\*This is not at all an exhaustive list. You need to look for other resources on the internet. But these will surely help you understand the basics and get started.

\*For people interested in coding, can go more into it but understand the concepts. They will help you make good algorithms further.

\*For people more interested in theory, go deep into that. You can ideate your own strategies and code.