Algothon 2019 – Phase 4

Congratulations on making it to the final phase of Algothon 2019. This section of the program is less structured than the other phases, more similar to the work a researcher will perform.

Phase 4 Objectives:

This pack is all about optimisation and risk analysis. This final phase is an exploratory process. Due to this, several topics will be suggested in this pack for you to explore and analyse. You are welcome to explore other topics you see relevant to your model. Topics to explore for the analysis include:

1. Projections for the worst-case scenario your model could encounter and methods to mitigate this.

2. Assessing correlation to the market and reducing the correlation.

3. Optimising for trade frequency.

4. Assessing maximum exposure to a single asset.

5. Assessing the generalisation performance of the model in other markets and assets.

Submission Instructions and Requirements

1. Perform your risk analysis and optimise your model.
2. Produce a report detailing your analysis and optimisations.

Learning Resources

If you are eager to understand more, we also recommend the following:

- Active Portfolio Management: A Quantitative Approach for Producing Superior Returns and Controlling Risk (McGraw-Hill Library of Investment & Finance) by Richard C. Grinold, Ronald N. Kahn. Book available in the Central Library of Imperial College
- Arnott, Robert D. and Harvey, Campbell R. and Markowitz, Harry, A Backtesting Protocol in the Era of Machine Learning (November 21, 2018). Available at SSRN: https://ssrn.com/abstract=3275654 or http://dx.doi.org/10.2139/ssrn.3275654
- López de Prado, Marcos, What to Look for in a Backtest (August 11, 2013). Available at SSRN: https://ssrn.com/abstract=2308682 or http://dx.doi.org/10.2139/ssrn.2308682
- Lo, Andrew. (2003). The Statistics of Sharpe Ratios. Financial Analysts Journal. 58. 10.2469/faj.v58.n4.2453. Available at: https://www.researchgate.net/publication/228139699_The_Statistics_of_Sharpe_Ratios
- Garleanu and Pedersen (2013). "Dynamic trading with predictable returns and transaction costs," Journal of Finance. Available at: http://www.lhpedersen.com/research