DA6701 Assignment 1 – Report

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1 Selection

1.1 Hierarchical Risk Parity

We did hierarchical clustering using single linkage, to find out the optimal leaf ordering, and quasi diagonalization. We then, using recursive bisection to figure out the weights, and chose the highest from each of the ten given sectors.

1.2 Sharpe's Ratio Maximization

- We considered all thirty stocks as a part of our portfolio and found the weights of each which maximise the sharpe's ratio. Out of them, only **14 stocks** had significant weights, and we chose stocks corresponding to the ten highest weights, each from a different sector.
- We considered ten portfolios, each consisting of three stocks from each category, and figured out the weights which maximise the sharpe's ratio in each category. We chose the stock with the highest weight out of each category.

2 Visualization

	Max Sharpe Weight	Min Variance Weight
BHARTIARTL	0.2536	0.1117
BAJAJ-AUTO	0.2179	0.0094
NTPC	0.1249	0.0517
SBIN	0.1218	0.0815
SUNPHARMA	0.0964	0.2132
NESTLEIND	0.0533	0.2014
ULTRACEMCO	0.0527	0.0696
HCLTECH	0.0343	0.1425
TITAN	0.0337	0.0898
HINDALCO	0.0113	0.0292

Figure 1: Weights

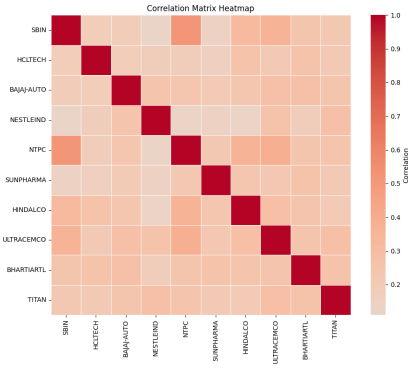

Figure 2: Correlation Map

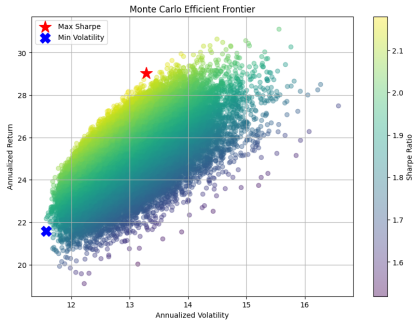

Figure 3: Efficient Frontier