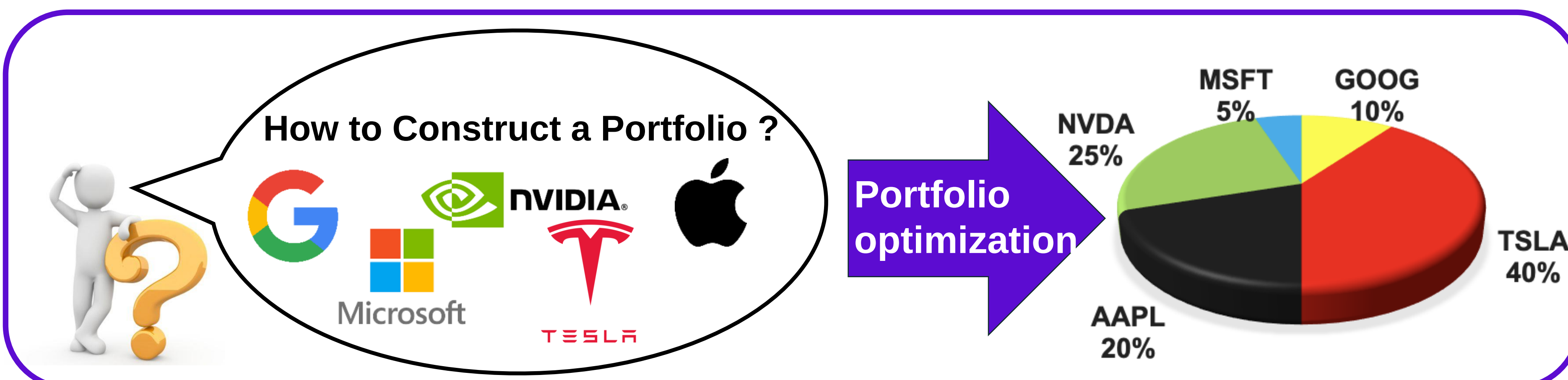


An Improved ℓ_0 -norm Mean-Variance Portfolio with Smart Beta Strategies

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Background

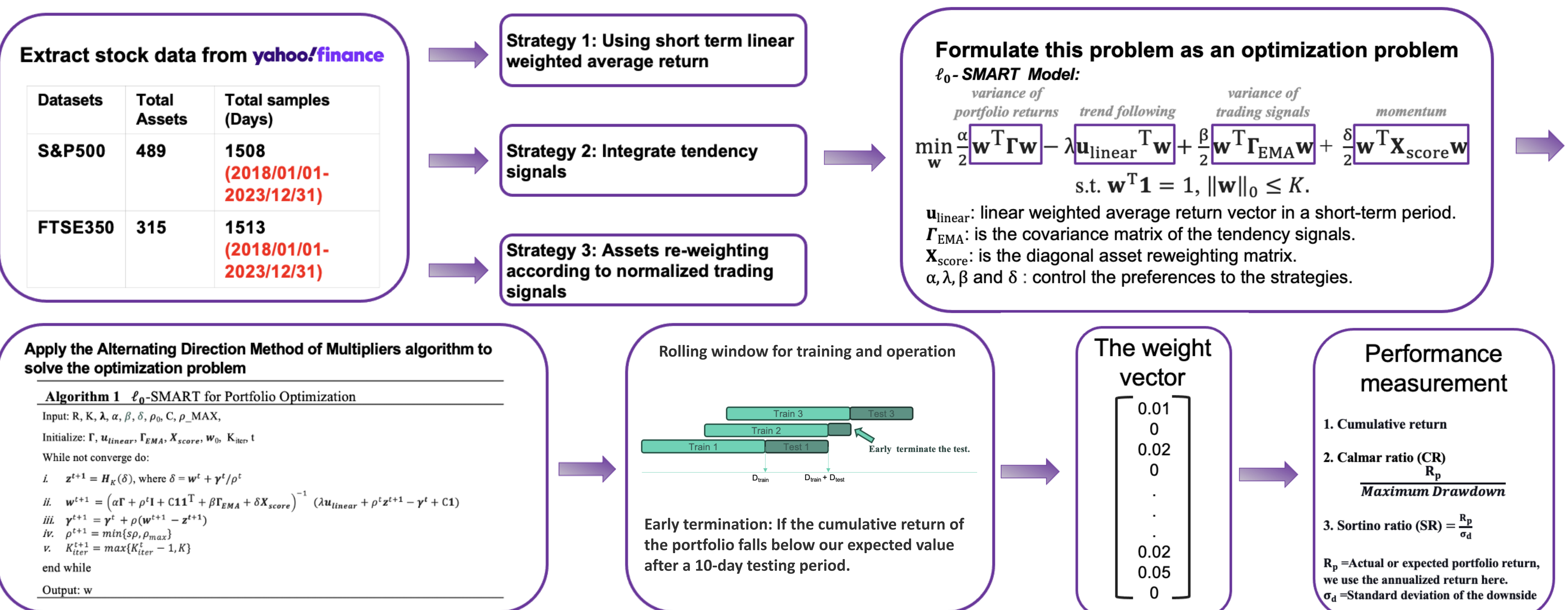


Objective

- To promote sparsity, we introduce an explicit sparsity control.
- We develop three new strategies and incorporate them into an optimization problem.
- We backtest the current markets, such as S&P500 and FTSE350.
- Experiment results demonstrate the superior performance of our ℓ_0 -SMART compared with the old ones.

Methodology

In the project, we propose an improved design for the ℓ_0 -norm MV model by incorporating smart beta strategies. Then, we develop the corresponding algorithm and simulation scheme. The main overview of our method is below:



Results

- In cumulative returns, ℓ_0 -SMART can beat the market.
- In Sharpe ratio and Calmar ratio evaluation, ℓ_0 -SMART outperforms the comparison method.

