

Portfolio Optimization Problem: A Taxonomic Review of Solution Methodologies

ABSTRACT

This survey paper provides an overview of current developments for the Portfolio Optimisation Problem (POP) based on articles published from 2018 to 2022. It reviews the latest solution methodologies utilised in addressing POPs in terms of mechanisms and performance. The methodologies are categorised as Metaheuristic, Mathematical Optimisation, Hybrid Approaches, Matheuristic and Machine Learning. The datasets (benchmark, real-world, and hypothetical) utilised in portfolio optimisation research are provided. The state-of-the-art methodologies for benchmark datasets are presented accordingly. Populationbased metaheuristics are the most preferred techniques among researchers in addressing the POP. Hybrid approaches is an emerging trend (2018 onwards). The OR-Library is the most widely used benchmark dataset for researchers to compare their methodologies in addressing POP. The research challenges and opportunities are discussed. The summarisation of the published papers in this survey provides an insight to researchers in identifying emerging trends and gaps in this research area.