



# FINOPTIX

## SUMMER PROJECT '25



### Fama French 3 Factor Model and MVO Optimization

#### INTRODUCTION

- **Mean-Variance Optimization** is a quantitative technique developed by Harry Markowitz that helps investors build an optimal portfolio by balancing expected return and risk (variance).  
🧠 **Core Idea:** The goal is to maximize returns for a given level of risk, or minimize risk for a given level of return.
- **The Fama-French 3-Factor Model** is an extension of the Capital Asset Pricing Model (CAPM). It explains stock returns using three risk factors:
  1. Market Risk Premium (MKT) – Return of the market minus the risk-free rate (like in CAPM).
  2. Size Premium (SMB) – “Small Minus Big”: Captures the tendency for small-cap stocks to outperform large-cap stocks.
  3. Value Premium (HML) – “High Minus Low”: Reflects the tendency of high book-to-market (value) stocks to outperform low book-to-market (growth) stocks.🧠 **Core Idea:** Stock returns are driven by exposure to these three systematic risk factors, not just market risk alone.

#### READING RESOURCES

- [Fama French 3 Factor Model \(Reading Resource\)](#)
- [MVO Optimization \(Reading Resource\)](#)
- [Fama French Model and MVO Optimization Report](#)

#### PYTHON IMPLEMENTATIONS

- [Fama French 3 Factor Model \(Python Implementation\)](#)
- [MVO Optimization \(Python Implementation\)](#)
- [Fama French Factors Dataset Link](#)

[Assignment-3 Link](#)