Cryptocurrency Portfolio Optimization with Return Forecasting Using Deep Learning

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Abstract

In the cryptocurrency industry, portfolio management is frequently tough. Selecting assets from thousands, forecasting costs, calculating returns, and assessing risks are all difficult tasks. Our portfolio optimization solutions, on the other hand, assist in the implementation of an autonomous portfolio optimization system by providing short portfolio timeframes, the ability to acquire and analyze all essential data, and easy access to previous data. Furthermore, we use deep learning models, such as recurrent neural networks, to forecast the return on each cryptocurrency (RNN). Finally, we integrated classic MV and Sharpe portfolios with our deep projected return to address the portfolio optimization challenge. The analysis is based on three years of cryptocurrency data from 2018 to 2021. MV and Sharpe portfolio models with deep predicted returns, i.e., MV-DF and Sharpe-DF, beat standard models, according to experimental results.

Keywords: Portfolio optimization, Cryptocurrency trading, Return forecasting, Deep learning.