

Enhancing Traditional Momentum using Artificial Intelligence

Thomas Schaller

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Forecasting the stock market is a difficult challenge for many investors. Quantitative algorithms are still what most investors use to invest their money in the stock market. But since the rise of artificial intelligence, many have been trying to beat these quantitative algorithms that dominated the field for decades. Unfortunately, this is not an easy task, as the stock market is quite unpredictable and depends on many parameters.

This thesis enhances momentum investing by trying simple and complex artificial intelligence models to predict the market and find stocks to invest in. This solution uses the concept of momentum investing, but adds artificial intelligence to find patterns in the rise or fall of a stock. There are already some works available online, but real solutions are usually not publicly available in the financial world because they help to gain money, which are not the case anymore if everybody are using them, or they represent not exactly what we want to achieve in this thesis.

This thesis first presents some basic financial knowledge, as well as various research projects similar to ours. In this thesis 4 different artificial intelligence models are tested, namely Linear regression, Random Forest, XGBoost, and deep neural networks. This allows us to find a neural network that creates portfolio with better statistics than simple momentum investing strategies. Moreover, this solution takes into account the risk to return ratio, which allows the portfolio to have less volatility than momentum investing strategies. Indeed, the portfolio of stocks created by the model has a Sharpe ratio of 0.5030 while the Sharpe ratio of simple momentum strategy is 0.3661.

Prof. Philippe Cudré-Mauroux