

# Optimasi Portofolio Berbasis Prediksi Return Saham Menggunakan Hybrid XGBoost dan Improved Firefly Algorithm untuk Saham – Saham dalam Indeks LQ45

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## Abstract

A portfolio is a collection of investment assets owned by a company or individual. Maximum return with minimum risk is the hope for every investor. However, in predicting stock price movements, stock price increases and decreases from time to time are difficult to predict. Therefore, machine learning is used to be a way to study and predict stock data. In this final project, the stock return prediction model uses the XGBoost method and the Improved Firefly Algorithm. The prediction results are then used for consideration in building a portfolio. Predicted stock returns that are higher than the threshold will enter the portfolio. From the stocks that have been selected, the portfolio is constructed using Equal Weight (EW). Portfolios with and without optimization are then compared to find the highest mean return, standard deviation, and Sharpe Ratio. The experimental results show that the performance of the 7 stock portfolio by considering the predictions has the best results when compared to the portfolio without considering the predictions with a mean return of 0.0029, standard deviation of 0.0158, and Sharpe Ratio of 0.1837.

**Keywords:** portfolio, stock return prediction, xgboost, firefly algorithm, LQ45

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