

ABSTRACT

Investing in stocks has become a popular choice in Indonesia, as evidenced by the significant increase in the number of retail investors. However, unwise investment decisions, especially by novice investors who tend to follow trends without thorough analysis, can result in significant losses. Therefore, utilizing predictions of the composite stock price index (IHSG) to design portfolio strategies can provide a solid foundation for making informed investment decisions. Previous research on predicting the IHSG often only used basic features such as opening price, closing price, high price, low price, and volume with daily data, thus not exploring further features that could affect stock predictions. Therefore, this study will discuss the application of Long Short-Term Memory (LSTM) and Gated Recurrent Unit (GRU) methods in predicting the IHSG by introducing the exchange rate feature, specifically the rupiah to dollar exchange rate. The historical data used in this study was obtained from <https://finance.yahoo.com/> covering the period from January 1, 2013, to December 31, 2022. The process of hyperparameter tuning to obtain the best hyperparameter combination in data training will use grid search and Bayesian optimization methods. The results of the study show that the exchange rate positively affects both models, with the average test results for the GRU method with the exchange rate having an R2 Score of 0.958113 and GRU without the exchange rate having an R2 Score of 0.937033, while the LSTM method with the exchange rate has an R2 Score of 0.925400 and LSTM without the exchange rate has an R2 Score of 0.921825.

Keywords : Investment, Deep learning, LSTM, GRU, Exchange Rate