

ABSTRAK

Penelitian ini bertujuan untuk membangun model prediksi harga saham PT Bank Mandiri Tbk (BMRI.JK) yang mampu menangkap pola *non-linear* dan dependensi jangka panjang pada data saham. Metode yang digunakan adalah *Bidirectional Long Short-Term Memory (BiLSTM)* dengan *Bayesian Optimization* untuk memperoleh kombinasi *hyperparameter* terbaik. Data penelitian ini diperoleh dari *Yahoo Finance* periode Januari 2015 hingga Desember 2025 dengan menggunakan data multivariat *Open, High, Low, Close, Volume (OHLCV)*, serta teknikal indikator, *Simple Moving Average (SMA)*, *Exponential Moving Average (EMA)*, dan *Relative Strength Index (RSI)*. Tahapan penelitian meliputi preprocessing, pembagian dataset, normalisasi *Min-Max*, pembentukan sliding window, optimasi *hyperparameter*, pelatihan model, dan evaluasi menggunakan *Mean Absolute Percentage Error (MAPE)*. Hasil penelitian menunjukkan bahwa model BiLSTM yang telah dioptimasi menghasilkan nilai MAPE sebesar 2,50% pada data testing. Hasil tersebut menunjukkan bahwa kombinasi BiLSTM dan Bayesian Optimization mampu menghasilkan model prediksi harga saham yang akurat dengan tingkat kesalahan yang rendah.

Kata Kunci : Prediksi Harga Saham, BiLSTM, Bayesian Optimization, Deep Learning, MAPE.

ABSTRACT

This study aims to develop a stock price prediction for PT Bank Mandiri (Persero) Tbk (BMRI.JK) that can capture non-linear patterns and long-term dependencies in stock market data. The proposed method employs Bidirectional Long Short-Term Memory (BiLSTM) optimized using Bayesian Optimization to obtain the best hyperparameter combination. The dataset was collected from Yahoo Finance from January 2015 to December 2025 and consists of multivariate data, including Open, High, Low, Close, Volume (OHCLV), as well as technical indicators such as Simple Moving Average (SMA), Exponential Moving Average (EMA), and Relative Strength Index (RSI). The research stages include data preprocessing, dataset splitting, Min-Max normalization, sliding window generation, hyperparameter optimization, model training, and evaluation using Mean Absolute Percentage Error (MAPE). The results show that the optimized BiLSTM model achieved a MAPE value of 2.50% on the testing dataset. These findings indicate that the combination of BiLSTM and Bayesian Optimization is effective for producing accurate stock price predictions with low forecasting error.

Keywords : Stock Price Prediction, BiLSTM, Bayesian Optimization, Deep Learning, MAPE.