

IMPLEMENTASI *DEEP LEARNING* MENGGUNAKAN *LONG SHORT TERM MEMORY* DALAM PERAMALAN HARGA *CRYPTOCURRENCY*

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ABSTRAK

Penelitian ini bertujuan untuk mengembangkan model Long Short Term Memory (LSTM) dalam memprediksi harga *cryptocurrency*, seperti Bitcoin, Ethereum, dan Binance Coin (BNB), menggunakan data historis dari Januari 2019 hingga Januari 2024. Pendekatan kuantitatif digunakan dengan tahapan meliputi pengumpulan data, pra-pemrosesan, pembangunan model LSTM, pelatihan, dan evaluasi model. Parameter evaluasi kinerja model mencakup Mean Absolute Percentage Error (MAPE) dan Root Mean Square Error (RMSE). Hasil penelitian menunjukkan bahwa model LSTM yang dibangun mampu memprediksi harga *cryptocurrency* dengan akurasi tinggi. Nilai MAPE masing-masing untuk Bitcoin, Ethereum, dan BNB adalah 3,94%, 3,09%, dan 2,17%, yang termasuk kategori sangat akurat. Penelitian ini menyimpulkan bahwa LSTM merupakan metode yang andal untuk peramalan harga *cryptocurrency* yang sangat fluktuatif, memberikan wawasan yang berguna bagi investor dalam pengambilan keputusan. Temuan ini berkontribusi dalam pengembangan teknologi prediksi pasar keuangan menggunakan metode deep learning.

Kata kunci: *Deep learning*, *long short term memory*, *cryptocurrency*, prediksi harga, LSTM.

IMPLEMENTATION OF DEEP LEARNING USING LONG SHORT TERM MEMORY IN CRYPTOCURRENCY STOCK PRICE FORECASTING

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ABSTRACT

This study aims to develop a Long Short Term Memory (LSTM) model to predict cryptocurrency prices, such as Bitcoin, Ethereum, and Binance Coin (BNB), using historical data from January 2019 to January 2024. A quantitative approach was employed, involving data collection, preprocessing, LSTM model development, training, and evaluation. Model performance was assessed using Mean Absolute Percentage Error (MAPE) and Root Mean Square Error (RMSE). The results indicate that the LSTM model effectively predicts cryptocurrency prices with high accuracy. The MAPE values for Bitcoin, Ethereum, and BNB were 3.94%, 3.09%, and 2.17%, respectively, classified as highly accurate. This study concludes that LSTM is a reliable method for forecasting the highly volatile cryptocurrency market, providing valuable insights for investors in decision-making. The findings contribute to advancing financial market prediction technology using deep learning methods.

Keywords: *Deep learning, long short term memory, cryptocurrency, price prediction, LSTM.*