# THE IMPLEMENTATION OF THE LONG SHORT-TERM MEMORY (LSTM) ALGORITHM FOR CRYPTOCURRENCY LAYER 1 PRICE TREND ANALYSIS

**Muhammad Febryan**
*Data Science Study Program, Faculty of Science and Technology*
*University of Technology Yogyakarta*
*Jl. Ringroad Utara Jombor Sleman Yogyakarta*
*E-mail: mfebryan7322@gmail.com*

**ABSTRACT**

Layer 1 cryptocurrencies such as Bitcoin, Ethereum, and Hedera are known for their high price volatility, making accurate price forecasting essential for investors. This study applies the Long Short-Term Memory (LSTM) algorithm to predict the prices of these three digital assets over the next 60 days. To enhance accuracy, a data stabilization approach was implemented by averaging daily opening and closing prices. The dataset spans the period from January 1, 2021, to December 31, 2024. The LSTM model was evaluated using RMSE, MAE, and R-Squared metrics. The results indicate strong model performance: Bitcoin (RMSE 1750.02, MAE 1278.37, R-Squared 0.9932), Ethereum (RMSE 91.49, MAE 63.06, R-Squared 0.9841), and Hedera (RMSE 0.0087, MAE 0.0039, R-Squared 0.9467). These findings suggest that the LSTM model is highly effective and may serve as a valuable tool for investors in planning strategies and managing investment risks more efficiently.

**Keywords:** Layer 1 Cryptocurrency, LSTM, Bitcoin, Ethereum, Hedera, RMSE, MAE, R-Squared.