

Comparison of CNN-Transformer and LSTM Models for Forex Market Forecasting

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Abstract

The foreign exchange (Forex) market is one of the largest and most volatile financial markets worldwide, making accurate trend prediction a significant challenge. In this study, we compare the performance of a traditional long short-term memory (LSTM) model with a hybrid convolutional neural network-transformer (CNN-transformer) model for forecasting Forex trends. Using a 20-year dataset covering major currency pairs (AUD/USD, CAD/CHF, EUR/GBP, GBP/USD), we evaluate both models based on common metrics such as mean square error (MSE), root mean square error (RMSE), relative mean error (RME), and mean absolute percentage error (MAPE). The results show that the LSTM model generally outperforms our proposed hybrid CNN-transformer model in most cases. Based on the findings of this study, it can be concluded that our proposed hybrid model performed poorly for some currency pairs, such as AUD/USD, CAD/CHF and EUR/GBP, while it showed better performance than the baseline model for the GBP/USD pair. Therefore, it can be inferred that our proposed model works better for specific data that is less noisy and less volatile.

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