ABSTRACT

The use of electrical energy continues to increase over time, in line with the promotion of green energy. Predicting electrical load usage is highly important for enhancing electricity production efficiency, particularly for electricity companies. One approach to forecasting electricity load is by employing a machine learning model. This study models short-term time series forecasts of electricity load using the hybrid CNN-BiLSTM model with an attention mechanism to calculate short-term predictions, specifically 1, 3, and 7 days ahead. The study aims to observe the effects of incorporating the attention mechanism into the CNN-BiLSTM hybrid model and the resulting accuracy it achieves.

Furthermore, we also compare the hybrid CNN-BiLSTM model with attention to the BiLSTM and CNN-BiLSTM models. As a case study, this research utilizes electricity load data from Bali, Indonesia. We also compare the experimental outcomes to demonstrate that the CNN-BiLSTM model with attention produces the highest accuracy, with a root mean square error of 13.676 and a correlation coefficient of 0.993 compared to the other two models.

Keywords: Electricity load forecasting, time series, CNN-BiLSTM, attention mechanism.