

## **An Application of Hybrid CNN-BiLSTM with an Attention Approach to Time Series Electricity Load Forecasting in Bali, Indonesia**

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### **Abstract**

Electrical energy use rises periodically to promote green energy. To increase electricity production efficiency, especially for electricity corporations, load prediction is essential. Electrical load prediction can be done using machine learning. The CNN-BiLSTM hybrid model with an attention mechanism was used to construct 1, 3, and 7-day power load time series forecasts in this study. Additional attention processes in the hybrid CNN-BiLSTM model will be examined to determine their accuracy. The CNN-BiLSTM hybrid model is also compared to the BiLSTM and CNN-BiLSTM models. This case study uses Bali, Indonesia, electrical load statistics. We compare experimental findings to show that the CNN-BiLSTM with Attention model has the best accuracy, with a root mean square error of 13.676 and a correlation coefficient of 0.993. Combining the BiLSTM model with a CNN layer and an attention mechanism improves electricity usage forecasts, according to these trials. While the tests concentrated on short-term forecasting, the CNN-BiLSTM model with an attention mechanism shows promise for intermediate and long-term forecasting.

(Keywords:)

electricity load forecasting , time-series , CNN-BiLSTM , attention mechanism

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