

Penerapan Algoritma Long Short Term Memory in Time Series untuk Deteksi Anomali Konsumsi daya pada Perangkat Rumahan

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Abstract

In the context of energy management, monitoring and detecting anomalies in power consumption data is critical to improving energy efficiency, and ensuring optimal operations. A power consumption anomaly is a situation where there is an unusual or significant change in the level or pattern of power consumption. These anomalies can include unusual behavior, spikes or drops in energy, and sudden patterns of energy consumption. In recent years, deep learning algorithms have become the most common algorithms for performing anomaly detection in time series. In this study, power consumption anomalies are detected in time series using the Long Short Term Memory neural network algorithm. The results of this research show that the Long Short Term Memory model that was built was successful in detecting power consumption anomalies in time series for testing on three home devices (a water pump, refrigerator, and microwave), with a total of 323 anomalies. The model evaluation results produce mean absolute error (MAE) values of 0.1824, 0.1626, and 0.1693, respectively, which indicate good model performance for identifying power consumption anomalies in time series.

Keywords: LSTM, anomaly detection, power consumption, time series, energy management.
