Pengembangan Sistem Peramalan Radiasi Matahari Menggunakan Metode *Long Short-term Memory* (***Development of Forecasting System for Solar Radiation Using Long Short-term Memory***).
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ABSTRACT

Solar radiation has an influence on the life of organisms on earth. Solar radiation is needed for agriculture, astronomy, climatology, building, health, hydrology, materials, oceanography, photobiology and renewable energy. The availability of data in one place is needed for planning a Solar Power Plant installation. Availability of future solar radiation data (forecasting) is important from the point of view of installation planning and market. In this study, a newer variation of the RNN, namely Long Short-term Memory (LSTM), is used for forecasting solar radiation. LSTM was created to solve the problem in RNN, namely the vanishing / exploding gradient problem. LSTM with a sliding window technique is used for forecasting solar radiation. Two LSTM model architectures have been developed, namely a model with one hidden layer (MS) and a model with two hidden layers (MD). Tuning hyperparameter input, neuron hidden layers, epochs were made in order to obtain the best model. The final result, the LSTM model, namely the MD43 model, by testing using data from January 1, 2017 to December 31, 2019, obtained an RMSE value of 0,871282160282135. This model is good enough to follow the solar radiation pattern, but has problems in sharp increase / decrease.

Key words: solar radiation, forecasting, Long Short-term Memory, LSTM, RMSE