

ABSTRAK

Solar panels have the potential to become a source of renewable electrical energy in an effort to reduce carbon gas emissions which have an impact on climate change. However, its use is limited because it depends on sunlight which is not available all the time, for example at night, so providing electrical power cannot only depend on solar panels. Prediction of active power on solar panels is needed to be able to regulate electricity supply at night. Meanwhile, there are limited studies regarding solar panel predictions using only time series data on solar panel active power without other weather data such as temperature and humidity. Therefore, in this research, active power predictions on solar panels were carried out using only solar panel active power time series data.

The method used to predict power in this research is Temporal Convolutional Network. This research utilizes convolutional network features and causal dilation in TCN. The model was run using solar panel active power time series data from PLTS Selayar, South Sulawesi. The model was then evaluated using Mean Squared Error (MSE), Root Mean Squared Error (RMSE), Normalized Mean Absolute Error (NMAE), and Correlation Coefficient (CC). The TCN performance results were then compared with Recurrent Neural Network (RNN) and Long Short Term Memory (LSTM). The final results show that TCN is superior for each evaluation metric with a fairly narrow margin against RNN and LSTM.

Keywords: Solar panels, power prediction, photovoltaic systems, deep learning, time series, TCN.