Abstract

Climate change has occurred in several countries, especially in tropical countries such as Indonesia. It causes extreme temperature changes in several Indonesian areas, especially Jakarta, one of the world's most populated cities. The population of Jakarta causes the activities carried out by residents to be disturbed by extreme temperature changes. In addition, drastic temperature changes also affect the energy consumption used by residents. Therefore, it is necessary to predict temperature to determine future temperature conditions so that residents can plan their activities. Temperature forecast can be done in several ways, one of which uses a machine learning approach. This research uses a deep learning model called the Convolutional Long Short-Term Memory (ConvLSTM). Moreover, we also compare the model with Multi-Layer Perceptron (MLP), and Long Short-Term Memory (LSTM). We use temperature data taken from the ERA-5 period years 2018 to 2020 located in Kemayoran, Jakarta, Indonesia. This research aims to investigate the accuracy of short-term temperature forecasting by using these three models. The model is built to predict short-term temperatures for 1, 3, and 7 days ahead. The performance of the three methods is measured by calculating the Root Mean Square Error (RMSE), Mean Square Error (MAE), and Coefficient Correlation (CC). The result shows that the LSTM performs better than the other methods to forecast 1, 3, and 7 days, i.e., with the lowest RMSE, MAE, and higher CC.

Keywords: Prediksi Suhu, *Machine Learning*, MLP, LSTM, ConvLSTM