Temperature Forecasting by using RNN and LSTM, Study case in Jakarta

Rizki Wulandari Muhammadia[1], **Didit Adytia** [2]

[1,2]Faculty of Informatics, Telkom University, Bandung
[4]PT Telekomunikasi Indonesia's Digital Service Division
[1]rizkiwulandarim@students.telkomuniversity.ac.id, [2]adytia@telkomuniversity.ac.id

Abstrak

Temperature, humidity, light intensity, rainfall, wind direction, and other factors all influence weather conditions. Extreme weather changes can occur very quickly nowadays, causing a variety of issues that can be disadvantageous to a variety of sides and aspects such as rising sea surface, heat waves, glaciers and so on. These extreme weather changes on temperature significantly could impacts daily humans life.There are several ways for forecasting current weather and temperature, one of which is the Neural Network model. In this work used Recurrent Neural Network (RNN) and Long Short Term Memory (LSTM) to forecast the temperature. The data used in this paper is from ERA5 and BMKG (Badan Meteorologi, Klimatologi, dan Geofisika) located in Jakarta Kemayoran, Indonesia with a time span from January 2015 to December 2020. Based on the results of the training performed by the Recurrent Neural Network (RNN) and Long Short-Term Memory (LSTM) models, s on lookback 14, with RMSE of 0.64, MAPE 1.84, CC 0.96,, while the Long Short-Term Memory (LSTM) obtained the best result on lookback 14and lookback 45, because on lookback 14 Long Short-Term Memory (LSTM) has the best RMSE results, namely RMSE 0.46, MAPE 1.21, CC 0.96, RMSE 0.43 and MAPE 1.06, and on lookback 45 LSTM get best MAPE 1.19 with RMSE 0.47, CC 0.97

Keywords: Temperature Forecast, Reccurent Neural Network, Long Short-Term Memory