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Prediction of photovoltaic energy generation using Recurrent and Transformer Neural Networks

Precise prediction of photovoltaic (PV) energy generation is essential for optimal, profitable and ecological management of electric energy resources all over the world. As a result, one attempts to develop more accurate prediction algorithms. This paper compares the application of Long Short-Term Memory (LSTM), a subtype of Recurrent Neural Networks, with Transformer Neural Network for estimating PV energy production. The results indicate that both analysed methods have comparable prediction accuracy. The experiments were conducted on data from PV sites deployed across campuses at Australian La Trobe University. However, future studies could verify this approach using different datasets. Algorithms and results presented in this study may especially contribute to the development of Transformer Neural Networks as a prediction method of PV energy production.

Author: ŚWIDER, Stanisław

Presenter: ŚWIDER, Stanisław

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