Photovoltaic Systems Technology

Chapter 9

Machine Learning Application for Solar PV Forecasting

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Summary

Owing to their intermittent nature, the integration of a substantial number of renewable energy sources (RESs), such as solar and wind, has an adverse impact on the stability and reliability of power systems. Solar PV power forecasting can be adopted to enhance system stability by providing estimated future power generation data to power system control engineers, as well as to optimize the dispatch of hydropower facilities. ML computational algorithms have demonstrated excellent performance in time sequence forecasting and can thus be used to anticipate power with weather factors as model inputs. This chapter describes the use of numerous ML computational algorithms for solar power forecasting in several solar parks in India. The performance of the ML algorithms in forecasting is compared to that of the Smart Persistence (SP) method, and the results reveals that the learning mode outperforms the other methods.

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