

Abstract:

How to collect the maximum of solar energy with the best installation of a photovoltaic module by predicting the sun position is presented in this contribution. The objective is to optimize the tilt of a photovoltaic module according to the sun position from the sunrise to sunset with an aim to maximize the efficiency. The trajectory of the sun is estimated by various artificial neural networks structures. The optimal tilt angle is computed based on this estimated sun trajectory γ . The data of Boumerdes city in Algeria have been used. The PV module I-V characteristic is estimated. The obtained statistical correlation coefficient R^2 -value is more than 0.98 for predicting the solar altitude angle and more than 0.95 for estimating the characteristics current-voltage of photovoltaic module