Performance Analysis of MPPT Controller Using Bayesian Regularization Based Artificial Neural Network in a Photovoltaic System

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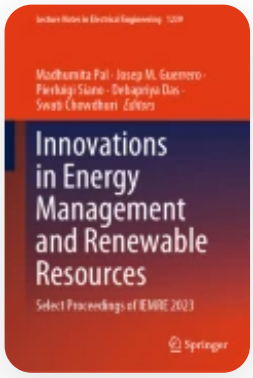

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Abstract

The uncertain nature of renewable resources creates some real time challenges in computing efficient energy transaction. This article highlights the need for an improved MPPT algorithm and also states the solution of issues faced during application of classical methodology. There are several techniques which are being applied in MPPT controllers to show its performance for tracking the maximum point for extraction of the maximum power from a photo-voltaic module. It has been depicted in this article that the application of Artificial Neural Network (ANN) accelerate the efficacy of power extraction rather than Perturbed & Observe (PO) method. The progress made so far with the proposed controllers has been designed and the operation has been verified by using MATLAB Simulink application. Significant disturbances, undershoots and ripples are observed in case of PO, whereas ANN performs superiorly with very less fluctuations. The comparative results mentioning the constraints

used are shown in several plots for both the methods.

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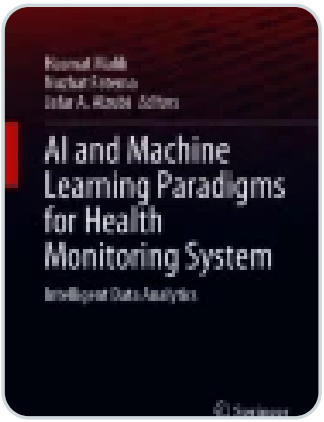

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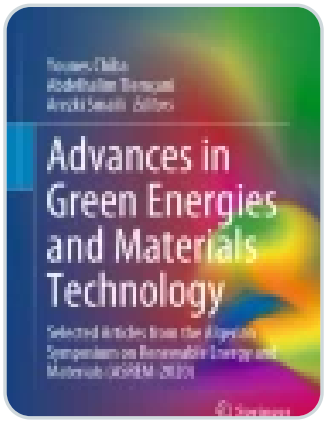

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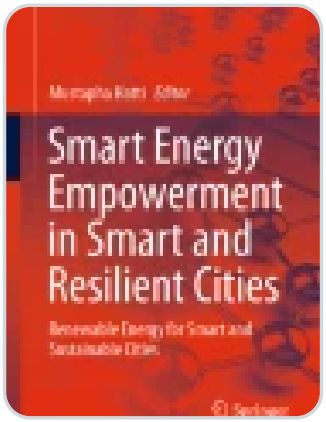

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