

Title: Light-optimized solar power generation

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This study sets up a new paradigm for AI-integrated solar optimization, which ensures real-time adaptability and enhanced performance in practical deployment.

Using the models developed in this research work, the optimized tilt angles, individual intensities, and the respective energy generation were calculated for the respective months.

These tools support early-stage planning for both standalone and industrial-scale solar installations, enhancing energy generation efficiency. Ultimately, this study offers a versatile and ...

To address the challenges posed by multiple meteorological influencing factors and the volatility of photovoltaic power generation, this study proposes a hybrid prediction model that ...

This paper proposes a model called X-LSTM-EO, which integrates explainable artificial intelligence (XAI), long short-term memory (LSTM), and equilibrium optimizer (EO) to reliably forecast solar ...

Despite a slight decrease in predictive precision with the expansion of the forecast horizon, the proposed AI-based framework consistently surpasses the persistent model, particularly ...

The experimental results and simulations demonstrate that the proposed model can accurately estimate PV power generation in response to abrupt changes in power generation ...

Solar panels, which convert sunlight into electricity, must be optimally positioned to capture the maximum amount of sunlight and operate within an ideal temperature range for efficiency.

A combination of AI, smart materials, adaptive solar cells, and blockchain power distribution provides a new solution towards weather-independent and autonomous solar power ...

Solar energy systems enhance the output power and minimize the interruptions in the connected load. This



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review highlights the challenges on optimization to increase efficient and stable ...

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