

A custom dataset was constructed by combining a public PV panel defect database with field-collected images, further expanded through data augmentation and self-training strategy.

Compared to other mainstream object detection models, LW-PV DETR also demonstrates excellent detection performance, providing an important reference for research on ...

Developing efficient surface contaminants and defect detection algorithms for PV panels can facilitate automated and intelligent maintenance by robotic systems in large-scale PV power ...

This study introduces an automated defect detection pipeline that leverages deep learning and computer vision to identify five standard anomaly classes: Non-Defective, Dust, Defective, Physical Damage, ...

As global solar capacity approaches 10 TW by 2030 (2024 Renewable Energy Market Report), surface defect detection has become mission-critical. This article breaks down the latest international ...

The detection method proposed in this paper was composed of three processing modules, mainly used for surface-defect detection on the PV panels, as shown in Figure 3.

The penetration of photovoltaic (PV) power generation into the grid is increasing, but its intermittency and instability pose major challenges to grid operation

Solar panel defect detection, a crucial quality control task in the manufacturing process, often faces challenges such as varying defect sizes, severe image background interference, and ...

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