

Surface defect detection of photovoltaic (PV) panels is of significant practical importance for improving power generation efficiency and reducing safety risks.

Advances in automation, prediction, and management have enabled sophisticated fault detection methods to enhance system reliability and availability. This paper emphasizes the pivotal ...

Object detection approaches are used either to locate solar panels or to determine the defects. In particular, solar panel recognition in remote sensing pictures is examined along with ...

To address these challenges, this paper proposes the LEM-Detector, an efficient end-to-end photovoltaic panel defect detector based on the transformer architecture.

Aiming at the current PV panel defect detection methods with insufficient accuracy, few defect categories, and the problem that defect targets cannot be localized, this paper proposes a PV panel ...

Therefore, defect detection in solar panels is essential. It helps manufacturers identify and eliminate defective panels in a timely manner, preventing them from entering the next production ...

Visible light imaging detection uses high-resolution cameras within the visible light range to capture images of photovoltaic modules, aiming to identify and record appearance defects, pollution ...

This paper proposes a photovoltaic panel defect detection method based on an improved YOLOv11 architecture. By introducing the CFA and C2CGA modules, the YOLOv11 model is ...

Detecting defects on photovoltaic panels using electroluminescence images can significantly enhance the production quality of these panels.

To address the challenges of high missed detection rates, complex backgrounds, unclear defect features, and uneven difficulty levels in target detection during the industrial process of ...

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