

Combining the needs of PV defect detection in the operation and maintenance of PV power generation systems with the results of simulation experiments. It is concluded that the detection model based on ...

Abstract: Solar panels are the core components of photovoltaic power generation systems, and their quality is directly related to safety and power generation efficiency. Therefore, surface defect ...

Recent advancements in machine vision, computer vision, and image processing have driven significant research into automated detection of surface defects in in PV panels.

To enable accurate detection of surface contamination and defect for autonomous cleaning robot, a PV-YOLOv8n-based detection method for photovoltaic surface, built upon a small-sample ...

This paper proposed a novel framework, consisting of image acquirement, image segmentation, fault orientation and defect warning, to remedy the limitations for PV module defects.

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 ...

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, ...

A Defect detection model for PV panel electroluminescence images: We developed a defect detection model tailored to EL images of PV panels, addressing the poor detection ...

Traditional defect detection methods struggle with feature extraction and suffer from low accuracy in identifying surface defects. To tackle these challenges, we propose YOLOv8-DG, an ...

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