

What is solar photovoltaic panel defect detection?

Nowadays, the photovoltaic industry has developed significantly. Solar photovoltaic panel defect detection is an important part of solar photovoltaic panel quality inspection. Aiming at the problems of chaotic distribution of defect targets on photovoltaic panels,...

Can ghost convolution be used for PV panel defect detection?

However, multiple tiny defects on the PV panel surface and the high similarity between different defects make it challenging to {accurately identify and detect such defects}. This paper proposes an approach named Ghost convolution with BottleneckCSP and a tiny target prediction head incorporating YOLOv5 (GBH-YOLOv5) for PV panel defect detection.

Can solar photovoltaic panel surface defect detection be applied to industrial inspection?

When solar photovoltaic panel surface defect detection is applied to industrial inspection, the primary focus lies in achieving a highly accurate and precise model with exceptional localization capabilities, and the training model will basically not affect the detection speed.

How a deep learning algorithm can detect a solar panel defect?

With the deepening of intelligent technology, deep learning detection algorithm can more accurately and easily identify whether the solar panel is defective and the specific defect category, which is broadly divided into two-stage detection algorithm and one-stage detection algorithm.

What data analysis methods are used for PV system defect detection?

Nevertheless, review papers proposed in the literature need to provide a comprehensive review or investigation of all the existing data analysis methods for PV system defect detection, including imaging-based and electrical testing techniques with greater granularity of each category's different types of techniques.

What is PV panel surface-defect detection technology?

Photovoltaic (PV) panel surface-defect detection technology is crucial for the PV industry to perform smart maintenance. Using computer vision technology to detect PV panel surface defects can ensure better accuracy while reducing the workload of traditional worker field inspections.

The traditional target detection method has limitations, including low recognition accuracy and slow detection speed. This paper suggests an improved Mask R-CNN-based intelligent ...

We also include complementary satellite imagery at 15.5 cm resolution with the aim of further improving solar panel detection accuracy. ... Small target detection has become ...

The system uses the YOLOv5 target detection model to realize image-based photovoltaic panel quantity

identification and abnormality detection. The system compares with ...

To address the challenge of PV panel fault detection, we reconfigure the YOLOv7 network to include an asymptotic feature pyramid network (AFPN) as the backbone for feature fusion. In addition, we propose a ...

on the solar panel defect detection data set show that after the improvement of the algorithm, the overall precision is increased by 1.5%, the recall rate is increased by 2.4%, ...

Using the BottleneckCSP module in the backbone network and neck network ensures that deeper semantic information of PV panels can be extracted, and a tiny target detection head is added ...

This study utilizes the fast inference speed and high detection accuracy of YOLOv5 to obtain a combination of detection speed and accuracy on the PV Multi-Defect dataset, which enables accurate and rapid detection of ...

To address the challenges of small defect objects and complex background in photovoltaic panel defect detection, an improved YOLOv7 based photovoltaic panel defect detection is proposed ...

Web: <https://ecomax.info.pl>

