

How to detect a defect in a photovoltaic module using electroluminescence images?

An intelligent algorithm for automatic defect detection of photovoltaic modules using electroluminescence (EL) images was proposed in Zhao et al. (2023). The algorithm used high-resolution network (HRNet) and a self-fusion network (SeFNet) for better feature fusion and classification accuracy.

Where can I find a research article about PV module defect detection?

A comprehensive search was conducted in reputable academic databases, including but not limited to IEEE Xplore and Google Scholar. Keywords such as "PV module defect detection," "solar cell crack detection," and "CNN-based defect detection" were used to retrieve relevant articles.

Can a real-time defect detection model detect photovoltaic panels?

Efforts have been made to develop models capable of real-time defect detection, with some achieving impressive accuracy and processing speeds. However, existing approaches often struggle with feature redundancy and inefficient representations of defects in photovoltaic panels.

How to detect micro-cracks in photovoltaic modules?

Jiang et al. 27 proposed a new method for detecting micro-cracks in photovoltaic modules by attention classification and segmentation network. This method can not only realize the task of classification and location but also segment the defect object.

Can EL images be used for photovoltaic panel defect detection?

Buerhop et al. 17 constructed a publicly available dataset using EL images for optical inspection of photovoltaic panels. Based on this dataset, researchers have developed numerous algorithms 9,10,12 for photovoltaic panel defect detection.

How deep learning is used in photovoltaic module defect detection?

The deep learning method also has been widely used in photovoltaic module defect detection 10. To reduce the detection network complexity, Akram et al. 11 proposed a light convolution neural network based on a visual geometry group network for detecting photovoltaic cell cracking defects.



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