Does varifocalnet detect photovoltaic module defects?

The VarifocalNet is an anchor-free detection method and has higher detection accuracy5. To further improve both the detection accuracy and speed for detecting photovoltaic module defects,a detection method of photovoltaic module defects in EL images with faster detection speed and higher accuracy is proposed based on VarifocalNet.

How are infrared defect images used in photovoltaic modules?

Firstly,the defect images of open-source photovoltaic modules and their existing problems are analysed; based on the existing problems,image enhancement and data enhancementare performed on the infrared defect images of photovoltaic modules,so that the infrared images meet the requirements of image availability and sample quantity.

Can convolution neural networks detect photovoltaic module defects?

Although it has a faster detection speed,detection accuracy is lower than the methods that are based on normal convolution neural networks. Li et al. 12 proposed a deep convolution neural network for detecting photovoltaic module defectsby using the aerial infrared images obtained from unmanned aerial vehicles.

Is there a fault diagnosis method for PV modules based on infrared images?

Here,a fault diagnosis method for PV modules based on infrared images and improved MobileNet-V3 is proposed.

How many IR images are used in the classification of PV modules?

The classification of 11 different categories of PV modules is performed. After image enhancement and data enhancement,500 images from each of the 11 fault categories were randomly selected to create a balanced dataset with a total of 5500 IR images. 85% of them are used for training,while the rest are used for testing.

How to use RPA and IR for inspection & fault diagnosis of PV modules?

Using RPA and IR for the inspection and fault diagnosis of PV modules follows several steps given by Figure 1 and depends on two main technologies: The first is collecting IR images through RPA,the second key technology include PV modules' anomaly detection and defect classification based on IR images.

The dataset contains 2,624 samples of 300x300 pixels 8-bit grayscale images of functional and defective solar cells with varying degree of degradations extracted from 44 different solar modules. The defects in the annotated images are ...

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