UAV identification of photovoltaic panel models

Can unmanned aerial vehicles support plant inspection and PV fault detection?

Unmanned aerial vehicles UAV with integrated thermal and RGB cameras have been used to support plant inspection and PV fault detection[74,75,112,113]. Many studies in the literature involve the application of different UAV and imaging sensors.

Can a UAV be used for PV inspection?

Generally,UAVs used for PV inspectionare equipped with a thermal camera (which may or may not complement a standard RGB camera or other sensors) to identify defects that can produce heat anomalies on the solar panels.

Can uav photogrammetry be used for Autonomous inspection of PV plants?

The autonomous inspection of PV plants through UAV photogrammetry has been explored in the literature,,,. The UAV is given a set of waypoints,usually arranged in such a way to cover a delimited area to ensure the required horizontal and vertical overlapping of images.

Can UAV-based approaches support PV plant diagnostics?

Focus was shed on UAV-based approaches,that can support PV plant diagnosticsusing imaging techniques and data analytics. In this context,the essential equipment needed and the sensor requirements (parameters and resolution) for the diagnosis of failures in monitored PV systems using UAV-based approaches were outlined.

Can a model based approach be used to detect PV panels?

A model-based approach for the detection of panels is proposedin : this work relies on the structural regularity of the PV arrays and introduces a novel technique for local hot spot detection from thermal images,based on a fast and effective algorithm for finding local maxima in the PV panel regions.

How to detect photovoltaic cells in aerial images?

Recognition of photovoltaic cells in aerial images with Convolutional Neural Networks(CNNs). Object detection with YOLOv5 models and image segmentation with Unet++,FPN,DLV3+and PSPNet.

The panel area extraction algorithm developed in this paper has a process of four stages, as described in Fig. 2. Firstly, candidates of the photovoltaic panel boundaries are extracted. To ...

a report from Solar Power Europe [1]. Defects of PV mod-ules is inevitable since PV modules usually operate under harsh outdoor environmental conditions. Researchers have reported ...

Thus, for an accurate inspection, extracting panels and limiting the diagnosis on their surfaces show up to be essential steps in the process of defects detection. We develop in ...

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semi-automatic extraction and localization of PV modules in UAV thermographic videos of large-scale PV plants (see fig. 1). It can be used to automate inspection of PV plants and to curate ...

Accurate identification of faulty photovoltaic (PV) modules is crucial for the effective operation and maintenance of PV systems. Deep learning (DL) algorithms exhibit promising potential for ...

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locating and classifying faulty Photovoltaic (PV) panels from Unmanned Aerial Vehicle (UAV) thermal infrared images. First, aerial triangulation based on photogrammetry is used to obtain ...

Solar panel hotspot localization and fault classification using deep learning approach. ... proposed a method for automatic identification of faulty PV Modules Using Drone ...

In Henry et al. (2020), it is proposed to use an unmanned aerial vehicle (UAV) integrated with an infrared thermography camera to automatically detect and localize faulty PV ...

Abstract. In the context of global carbon emission reduction, solar photovoltaic (PV) technology is experiencing rapid development. Accurate localized PV information, including location and size, is the basis for PV ...

An intelligent recognition technique of photovoltaic panel hot spot based on UAV and target detection algorithm is proposed in order to address the issues of low efficiency and high cost ...

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