UAV photovoltaic panel crack detection

This paper provides an in-depth literature review on image processing techniques, focusing on deep learning approaches for anomaly detection and classification in photovoltaics.

Renewable energy sources, particularly solar energy, stand out as vital solutions to global energy and environmental challenges. However, defects such as micros.

To address this issue, this paper proposes a method and system for hot spot detection on photovoltaic panels using unmanned aerial vehicles (UAVs) equipped with multispectral cameras.

Urged by the aforementioned problems still unsolved, in this work we propose a novel multi-stage architecture for the detection of anomalies in images of PV panels collected on-site by UAV.

A novel mechanism based on Deep Learning (DL) and Residual Network (ResNet) for accurate cracking detection using Electroluminescence (EL) images of PV panels is proposed in this ...

A custom dataset, annotated in the COCO format and specifically designed for solar panel defect and contamination detection, was developed alongside a user interface to train and evaluate the models.

Researchers combine electroluminescence and infrared imaging with machine learning for automated drone inspection of solar panels to detect cracks and shaded areas to enhance both solar ...

This study presents an automated aerial inspection framework that leverages deep learning-based object detection models to identify structural defects in photovoltaic (PV) panels.

The model maintains high detection performance while significantly reducing parameters and GFLOPs, making it ideal for real-time PV panel defect detection on resource-constrained UAVs.

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