

What is the information gap in distributed solar photovoltaic (PV) arrays?

Here, we focus on the information gap in distributed solar photovoltaic (PV) arrays, of which there is limited public data on solar PV deployments at small geographic scales. We created a dataset of solar PV arrays to initiate and develop the process of automatically identifying solar PV locations using remote sensing imagery.

What are the characteristics of PV panel image data?

The results reveal that the PV panel image data has several specific characteristics: highly class-imbalance and non-concentrated distribution; homogeneous texture and heterogeneous color features; and the notable resolution threshold for effective semantic-segmentation.

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.

Are annotated solar panels available in native resolution and HD satellite imagery?

To the best knowledge of the authors, there are no publicly available datasets including annotated solar panels in native resolution and HD satellite imagery. The process for creating the paired native resolution and HD image tiles and associated labels. Both sets of components contain three image tiles and 2,542 annotated solar panels.

How can PV panels be detected and segmented?

PV panels can be detected and segmented from satellite or aerial images by designing representative features (e.g., color, spectrum, geometry, and texture).

Why are PV panel pixels less than the background?

Moreover, the number of PV panel pixels is far less than the background. From the computer vision perspective, this is a typical class imbalance situation when a class is overrepresented (Table 2), i.e., having much more examples than others in the dataset. Table 2. Targeted better using machine learning for PV segmentation.

Aerial view of the horse-shaped solar power station at the Kubuqi Desert in Ordos, North China's Inner Mongolia Autonomous Region Photo: Courtesy of the State Power Investment Corporation Nei ...

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The total area of solar panels is calculated by multiplying the count of ones in the matrix by the area per pixel value. In turn, the number of solar panels is calculated by dividing the total solar ...

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Photographer Tom Hegen has captured a stunning series of aerial photos showing what sprawling solar power plants look like from a bird's-eye view. The project is titled The Solar Power Series.

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In this work a new approach is investigated where a computer vision algorithm is used to detect rooftop PV installations in high resolution color satellite imagery and aerial photography.

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