Wind turbine blade flatness detection

How to detect blade defects of wind turbines?
Therefore,timely and efficient detection of blade defects of wind turbines is particularly important. Traditional defect-detection methods include percussion detection,telescope observation,and visual detectionby sending people to high places to inspect the blades [4].

Can a feature Fusion network improve wind turbine blade surface defect detection?
The proposed work introduces a novel, lightweight feature fusion network model based on the attention mechanism to address the issues of high time consumption and poor effectiveness in wind turbine blade surface defect detection. A bidirectional feature fusion network enhances the YOLOX network.

Can RBI-yolox model detect surface defects on wind turbine blades?
The experimental results illustrate the effectivenessof the RBi-YOLOX model proposed in this research for localizing and recognizing surface defects on wind turbine blades.

How accurate is a blade surface defect detection model?
The results indicate that the blade surface defect detection model incorporating the attention mechanism can effectively identify five types of defects with an average detection accuracy of mAP-0.5,achieving approximately 95.03 %and a detection frame rate of about 54.56 frame·s-1.

What happens if a wind turbine blade is damaged?
Among these,the wind turbine blade is an important part of a wind turbine. If the wind turbine blade is damaged,it will cause serious consequences. The traditional methods of defect detection for wind turbine blades are mainly manual detection and acoustic nondestructive detection,which are unsafe and time-consuming,and have low accuracy.

How many images are in the wind turbine blade surface defect dataset?
The wind turbine blade surface defect dataset comprises 2800,400,and 800 imagesfor the training,validation,and testing sets,respectively,randomly sampled in a ratio of 7:1:2. Furthermore,Fig. 9 displays the distribution of large,medium,and small defect boxes in the dataset. Fig. 9.

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