

# **Pin Defect Detection Method of UAV Patrol Overhead Line Based on Cascaded Convolution Network**

**ABSTRACT:** Pin plays the role of fixing power equipment on the overhead line. Once it is missing, it will lay a serious hidden danger for the normal operation of the overhead line . In view of the complex background of inspection image and the small size of pin, this paper proposes a pin defect detection method based on cascaded convolution network. The training samples are preprocessed by data enhancement techniques such as Gaussian blur and brightness random disturbance before defect detection. The overall detection method is divided into two parts: positioning and diagnosis. Firstly, all fastener positions including pins are located by the improved Faster-RCNN network, and then RetinaNet network is cascaded to diagnose the defects of the fastener. Through cascade step-by-step detection, the block location information of the target object is effectively extracted from the complex background, and the interference of the invalid image information is eliminated. The experiment shows that this method can effectively detect the pin defects in the UAV patrol image. The Precision rate reaches 91.8%, the Recall rate reaches 90.3% on the test data set and it has good robustness to the change of light intensity.