Battery defect appearance detection

Can a full-surface defect detection method be used for automotive 21700 series lithium batteries?
Automotive 21700 series lithium batteries are prone to surface defects during production and transportation, thus affecting their performance, so we propose a full-surface defect detection method for battery cases based on the synthesis of traditional image processing and deep learning to address this problem.

What is the distribution of defects in a cylindrical battery case?
Distribution of defects in the cylindrical battery case. To analyse the surface defect characteristics of a cylindrical battery case,most of the defects exist mainly on its cylindrical surface (side)and are affected by the material reflection problem,resulting in complex image acquisition and detection.

What is the quality inspection process for battery cases?
Currently,in industrial production,the majority of the quality inspection processes for battery cases are manual. However,workers have varying skill levels,and as working hours increase,ensuring accurate defect detection becomes more difficult,which can lead to occasional misdiagnosis and omissions.

Do DSSD and yolox detect defects on cylindrical battery cases?
Comparison of the detection models for defects on the side and bottom of the battery case. The performances of DSSD,Faster R-CNN,YOLOX,and YOLOv5 are poorin the detection of defects on cylindrical battery cases.

What is a serious defect in a battery case?
Among these,deformations,scratches,dents,and notchesare considered serious defects that significantly impact the quality of the battery case,potentially affecting its performance and,in severe cases,leading to unforeseen accidents.

Is there a defect dataset for cylindrical battery cases?
Since there is no publicly available defect datasetfor cylindrical battery cases,a defect dataset is established,and the dataset is augmented and expanded via the traditional method and the ACGAN model.

With a scarcity of specific defect data, we introduce an innovative Cross-Domain Generalization (CDG) approach, incorporating Cross-domain Augmentation, Multi-task Learning, and Iteration ...

This article takes the appearance defect detection of battery pack blue film as an example, focusing on introducing that Huahan Weiye uses 2.5D+AI to solve industrial testing difficulties. Appearance defect detection of lithium battery pack after blue film. 1. ...

Automatic Optical Inspection Machine for Hard Capsule Appearance Defects is applied to appearance defect detection, internal defect detection and color sorting of 00 # to 4 # empty capsules in capsule manufacturing

plants and pharmaceutical plants. ... appearance detection (positive battery, negative battery, the side shell), battery scanning ...

During the manufacturing of lithium-ion battery electrodes, it is difficult to prevent certain types of defects, which affect the overall battery performance and lifespan. Deep learning computer vision methods were used to evaluate the quality of lithium-ion battery electrode for automated detection of microstructural defects from light microscopy images of the sectioned ...

In this paper, the visual detection algorithm is studied to detect the defects such as pits, rust marks and broken skin on the surface of lithium battery, specifically to design the imaging experimental platform of lithium battery; use different lighting schemes to design different battery positioning and extraction algorithms; use Hough ...

learning and defect detection using deep learning. X. R. Zeng[1] used the Sobel template algorithm to detect the surface of cylindrical bare-shell batteries. Z. C. Kang[2] suggested a pit detection approach that combines density detection, ...

The experimental results show that the proposed YOLO-MDD has a mean average precision of 80% for the defect detection of the lithium battery shells, especially with a ...

Appearance Surface Defect Detection on Cylindrical Lithium-Ion Battery Using Deep Residual Networks with Transfer Learning - da62b207/LiIonDefDet-

With the continuous development of science and technology, cylindrical lithium batteries, as new energy batteries, are widely used in many fields. In the production process of lithium batteries, various defects may occur. To detect the defects of lithium batteries, a detection algorithm based on convolutional neural networks is proposed in this paper. Firstly, image ...

Discover industrial CT inspection for batteries. The Battery Analysis Module in Voyager provides advanced tools specifically designed for the inspection and quality control of battery cells, including cylindrical, pouch, and prismatic types. It features automated measurements for key characteristics like Anode-Cathode Overhang (ACO) distance, debris detection, and can wall ...

In the related art, the last appearance detection procedure before finished battery cell blanking is related to quality control of finished battery cell blanking, appearance defects of the battery cells are detected by using appearance detection equipment, but the existing appearance detection equipment can only carry out appearance detection on the standing battery cells, the detection ...

Given the increasing use of lithium-ion batteries, which is driven in particular by electromobility, the characterization of cells in production and application plays a ...

Battery defect appearance detection

???: ?????, ????, Co-DETR, ?????????, Shape IoU?? Abstract: To address the challenges arising from the large scale and shape differences in defects on the end face of lithium battery casings, which make the identification of small target defects difficult, we propose a lithium battery surface defect detection algorithm based on BDD-DETR (Battery ...

The invention provides a method and a system for detecting appearance defects of a battery module based on deep learning, wherein the method comprises the following steps: obtaining...

The aluminum laminate pouch of pouch batteries is highly prone to deformation, which can cause various surface defects, thereby affecting their service life and potentially posing safety hazards. To address this problem, we propose an algorithm named YOLOv8-UCB for detecting surface defects in pouch batteries, which is based on the YOLOv8 model. First, while retaining the ...

Electronics 2024, 13, 173 3 of 16 Initially introduced by Joseph et al. in 2016, the YOLO (You Only Look Once) algo-rithm marked a significant advancement in object detection.

Web: https://oko-pruszkow.pl