. بهبود تشخیص عیوب در تولید صنعتی با استفاده از یادگیری درک تصویر

. Improving defect detection in industrial production using image perception learning

کلمات کلیدی

defect detection industrial production image perception

defect detection industrial production image perception learning

لینک جستجو

<https://scholar.google.com/scholar?start=30&q=yolo+defect+detection+industrial+production+image+perception&hl=en&as_sdt=2007&as_ylo=2024>

لینک دیتاست

<https://datasetsearch.research.google.com/search?src=0&query=industrial%20production%20image%20&docid=L2cvMTFzbHo5MG41ZA%3D%3D>

<https://datasetsearch.research.google.com/search?src=0&query=%20defect%20detection%20industrial%20production%20image%20&docid=L2cvMTF3MWg1OXY1aA%3D%3D>

<https://data.mendeley.com/datasets/4nn2w8rvx3/2>

<https://www.kaggle.com/datasets/beschue/industrial-classification-data-set>

**YOLO-CEA: a real-time industrial defect detection method based on contextual enhancement and attention**

39,95 URO

<https://link.springer.com/article/10.1007/s10586-023-04079-7>

## Abstract

This paper proposes a real-time industrial defect detection method based on context enhancement and attention to address the problem that current general-purpose target detectors can hardly achieve high detection accuracy and fast detection speed simultaneously. First, a modified MonileNetV3 is used as the backbone network to reduce the number of parameters and improve the model detection speed. A lightweight TRANS module is proposed at the end of the backbone network to combine more layers of features provided by global contextual information for complex background small target detection. Secondly, a cross-layer multi-scale feature fusion network is designed to fully fuse the fine-grained and semantic feature information extracted by the backbone and enhance the spatial location information between neighboring feature layers. Finally, a cascaded Two-channel Efficient Space attention module is used to fully extract texture and semantic features from the defective regions, allowing the model to focus more on the wrong locations and improve the feature representation capability of the network. The NEU-DET steel and PCB datasets are used to test the effectiveness of the proposed model. The experimental results show that compared to the original YOLOv5s algorithm, the mAP metrics are improved by 5.9% and 0.6%, F1 is improved by 4.82% and 0.93%, respectively, and the parameters are reduced by 33.77 M, enabling fast detection of industrial surface defects and meeting the needs of the entire industry.