

A Survey on Fabric Identification and Defect Detection

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Abstract: Due to the intricate geometries and wide diversity of fabric flaws, detecting them is a difficult task in the fabric industry. Numerous approaches have been put out to address this issue, but they all have very poor detection velocities and accuracy. As a traditional deep learning technique and end-to-end target identification algorithm, YOLOv4 has quickly developed and been used in numerous sectors with positive results. This study suggests a novel SPP structure that employs Soft-Pool rather than Max-Pool to detect fabric defects more accurately than the YOLOv5 method. The enhanced YOLOv5 method with three Soft-Pool has the advantage of processing the feature map efficiently, which significantly improves the detection accuracy and lessens the negative impacts of the SPP structure. The improved YOLOv5 can identify the location of defects accurately and quickly, and can also be applied in other defect detection industries.

Keywords: Convolutional neural network, activation function, fabric defects, YOLOv5

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