Decoding Barcode Images with YOLOv8 and REAL-ESRGAN

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Abstract

Barcodes have long been an indispensable part of modern trade and logistics, allowing for the effective tracking and identification of products and packages for a long time and have become a popular standard for production management., but in industrial factories, depending on superior requirements, we can create an integrated barcode reader combined with other functions using the resources available with their cameras. This study explores a new approach to decoding barcode images, leveraging the capabilities of YOLOv8 [18], an advanced object detection model and REAL-ESRGAN [19], a-state-of-the-art image processing method for super-resolution image. The main objective of this study is to demonstrate the feasibility and effectiveness of using YOLOv8 to locate and extract barcodes from complex scenes and the REAL-ESRGAN method to improve barcodes image, increasing successful decoding accuracy and finally conducting a comparative survey of super-resolution methods applied with barcode images. This summary serves as the basis for an evaluation study of super-resolution methods, with potential implications for enhancing barcode-based systems in various real-world scenarios.

Keywords: OpenCV2, YOLOv8, REAL-ESRGAN, Pyzbar.