

Improvement of QR Code Recognition Based on Pillbox Filter Analysis

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Abstract

The objective of this paper is to perform the innovation design for improving the recognition of a captured QR code image with blur through the Pillbox filter analysis. QR code images can be captured by digital video cameras. Many factors contribute to QR code decoding failure, such as the low quality of the image. Focus is an important factor that affects the quality of the image. This study discusses the out-of-focus QR code image and aims to improve the recognition of the contents in the QR code image. Many studies have used the pillbox filter (circular averaging filter) method to simulate an out-of-focus image. This method is also used in this investigation to improve the recognition of a captured QR code image. A blurred QR code image is separated into nine levels. In the experiment, four different quantitative approaches are used to reconstruct and decode an out-of-focus QR code image. These nine reconstructed QR code images using methods are then compared. The final experimental results indicate improvements in identification.

Keywords: QR code, pillbox filter, recognition

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