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## An LBP encoding scheme jointly using quaternionic representation and angular information

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### Abstract

Local descriptors play a crucial role in numerous computer vision and pattern recognition applications. This paper proposes a novel local descriptor, called the quaternionic local angular binary pattern (QLABP), for color image classification. QLABP is based on the quaternionic representation (QR) of color images such that it is able to handle all color components holistically as well as consider their relations. Using QR, the quaternionic angular information is further developed to account for more color characteristics. We provide two ways to derive the quaternionic angular information from different perspectives. A pattern encoding operation is finally conducted on the obtained angular information to obtain QLABP. The effectiveness of QLABP has successfully been evaluated by comparing with several state-of-the-art descriptors.

### Keywords

**Author Keywords:** Quaternionic representation (QR); Local binary pattern (LBP); Quaternionic angular information; Image classification

**KeyWords Plus:** TEXTURE CLASSIFICATION; COLOR; DESCRIPTOR; FEATURES; SCALE

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