Abstract

For a precise texture classification and analysis, a run length matrix is constructed on the Local Binary pattern using fuzzy principles in the present paper. The proposed Run Length Matrix on Fuzzy LBP (RLM-FLBP) overcomes the disadvantages of the previous run length methods of texture classification that exist in the literature. LBP is a widely used tool for texture classification based on local features. The LBP does not provide greater amount of discriminate information of the local structure and it has a various other disadvantages. The main disadvantage of LBP is, that it compares the centre pixel value with its neighbors to derive the one of the three possible values \{0, 1, 2\}. The basic drawback of this comparison is that it is very sensitive to noise. And a major contrast between the central pixel and its surroundings are easily resulted by the slight fluctuations above or below the value of the Centre Pixel (CP) and its surroundings. To overcome this problem and to represent the missing local information
effectively in the LBP, the present study introduced the concept of fuzzy logic on LBP. This
overcomes the problem related to noise and contrast. The proposed method initially converts
the 3×3 neighborhood into fuzzy LBP. In the second stage the proposed method constructs
the Run Length Matrix on Fuzzy LBP (RLM-FLBP). On these RLM-FLBP texture features are
evaluated for a precise texture classification.

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Index Terms

Computer Science  Pattern Recognition

Keywords

Run Length Matrix  Fuzzy LBP  Centre Pixel  Local Structure