Texture and Medical Image Classification using Wavelet Completed Local Ternary Count (WCLTC) Texture Descriptor

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Abstract:
A Completed Local Ternary Count (CLTC) was proposed by integrating the Local Ternary Pattern (LTP) with the Completed Local Binary Count (CLBC) to overcome the noise sensitivity and the improve the discriminative property. Moreover, the discriminative property of the proposed CLTC is improved by combining it with Redundant Discrete Wavelet Transform (RDWT) to construct a Wavelet Completed Local Ternary Count (WCLTC). As a result, more accurate capturing of the local texture within RDWT domain can be done and the exact measure of local texture can be used. The proposed WCLTC is used for image classification task in terms of texture and medical images. Two benchmark texture datasets which are CURTEX and OuTex while three medical image databases which are 2D Hela, VIRUS Texture and BR datasets are used to evaluate the WCLTC performance. The experimental results show an impressive classification accuracy with some of these datasets. The WCLTC performance outperformed the previous descriptors in many cases. The WCLTC achieve highest classification accuracy reach 96.91%, 97.04%, and 72.89% with 2D Hela, CURTEX and Virus datasets, respectively