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FEATURE BASED ON MODULUS MAXIMA OF WAVELET FRAME REPRESENTATION FOR TEXTURE RETRIEVAL

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Abstract. *Wavelet transform modulus maximum is considered as one of the most important characterizations of a signal. This paper presents a new texture descriptor based on modulus maximum of the wavelet frame representation for texture retrieval, which includes two aspects: the density of modulus maxima and the mean of magnitudes of modulus maxima. Modulus maxima are related to the sharp variations in the texture. So the former is a multiresolution measure of the coarseness of the texture. The latter reflects the distribution of energy of modulus maxima along the frequency axis over scale and orientation. To combine the two different kinds of characterizations, a new dissimilarity measure is proposed. The detailed experiments are performed over two benchmark texture image databases to verify the effectiveness of the proposed feature and dissimilarity measure.*

Keywords: Texture retrieval, Modulus maximum, Dissimilarity measure, Discrete wavelet frame

1. **Introduction.** The amount of visual information available in digital format has grown exponentially in recent years, which requires an effective and efficient way to retrieve particular images. Content-Based Image Retrieval (CBIR) was proposed to address this issue in the early 1990s [1]. The ideal CBIR systems should automatically extract and index the semantic content of images to meet the requirements of special application areas. Although it seems effortless for a human being to pick out photos of horses from a collection of pictures, automatic object recognition and classification under complex picture background are still among the most difficult problems in image understanding and computer vision. This is the main reason why low-level features such as color, texture, shape, and spatial relationship are widely used. Furthermore, in specific applications, such