



Combination of dictionary learning by K-SVD and a colorimetric texture descriptor for improved identification of geological structures : Case of rocks

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Résumé en anglais	<p>In this paper, we propose a new representation of characteristics based on texture and color analysis for rock recognition. The proposed method combines the discriminating colour and texture characteristics of a rock image from a composite LBP descriptor to make automatic, fast and efficient rock identification. Indeed, the colorimetric texture descriptor ALBPCSF (Adjacent Local Binary Pattern based on Color Space Fusion) derives from the concatenation of the LBP texture characteristics and the color characteristics with the fusion of the two (02) colorimetric spaces RGB and HSV. In our methodology we first applied ALBPCSF on images of two (02) different families of rocks that are magmatic rocks and metamorphic rocks to produce colorimetric texture images then the K-SVD (K-Singular Value Decomposition) dictionary algorithm with a choice of suitable parameters is applied to said texture images produced to calculate a signature of the rocks from our image base. For dictionary learning the K-SVD method uses Orthogonal Matching Pursuit (OMP) as a sparse coefficient coding algorithm. The experimental results of the proposed approach on our image database show that the results of the proposed color LBP are relatively better than those with a grayscale or scalar LBP on the one hand and better than those of the direct K-SVD on the initial images on the other hand. The proposed strategy contributes significantly to improving the performance of automatic rock identification systems.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua18046 [13]

Liens

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