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Model-Based MRF Classification for Skin Lesions Using Global Pattern Method

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Abstract*:* In my project work, different model-based Markov Random Field (MRF) classification for skin lesions of global patterns in dermoscopic images are proposed. Global pattern method is used in the pattern analysis framework, diagnosis the melanoma used by dermatologists. A Dermoscopic image is modeled by a finite symmetric conditional Markov model and applied to L*a*b* color space and estimate the features. The input image is segmented by various techniques. This features are supposed to follow Gaussian model, Gaussian mixture model, and bag-of-features histogram model. The classification is carried out by an image retrieval approach with different distance metrics. The main aim of this paper is the classification of a entire pigmented lesion into Reticular pattern, Globular pattern, Homogeneous pattern by texture analysis.The image database extracted from a public Atlas of Dermoscopy. The best classification success rate is achieved by the Gaussian mixture model-based method with a 78.44% success rate in average.

Keywords: Markov Random Field (MRF), Gaussian Model, Gaussian Mixture Model, Bag of Features