

# NEW CHARACTERIZATION METHODOLOGY FOR SKIN TUMORS

## CLASSIFICATION

Messadi, M.; Bessaid, A.; Taleb-Ahmed, A.

### **Abstract :**

Our objective in this paper is to introduce the efficacies of texture in the interpretation of color skin images. Melanoma is the most malignant skin tumor, growing in melanocytes, the cells responsible for pigmentation. This type of cancer is nowadays increasing rapidly; its related mortality rate increases by more modest and inversely proportional to the thickness of the tumor. This rate can be decreased by an earlier detection and better prevention. Using the features of skin tumors, such as color, symmetry, and border regularity, an attempt is made to determinate if the skin tumor is a melanoma or a benign tumor. In this work, we are interested by adding to form parameters such as the asymmetry (A) and the shape irregularities of skin tumors (B), the textural parameters to estimate colors in dermatoscopic images. In this case, the images are analyzed using textural parameters computed in several directions. These parameters and the form parameters are added to obtain a better classification results. A statistical analysis is performed over these ratios to select the most highly discriminating textural parameters. The method has been tested successfully on 144 images and we found significant differences between the lesions (melanoma and benign). Finally, these parameters (form and parameters of texture selected) are only use to classify the benign and malignancy of the skin lesion. A multilayer neural network is employed to differentiate between malignant tumors and benign lesions.

**Keywords :** Segmentation; pre-processing; texture; form parameters; melanoma recognition; neural networks.

**Journal Title / Revue :** Journal of Mechanics in Medicine and Biology , ISSN : 0219-5194, DOI : 10.1142/S0219519410003514, Issue : 3, Volume : 10, pp. 467-477, September 2010.