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SEGMENTATION OF SKIN IN DERMATOSCOPIC IMAGES USING SUPERPIXELS COMBINED WITH COMPLEX NETWORKS

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Summary: Studies of complex networks have been an important topic of interest to many researchers, in part due to its potential for a simple representation of complex systems in various fields of science. Image segmentation is one of the most important tasks in image analysis with a large range application. However, some traditional techniques exhibit high computational costs, hindering their application, because the complexity of such approaches are intrinsically related to the nature of the image and also the desired accuracy at. Image segmentation accuracy, however, is a subjective concept and is often associated with how much it resembles segmentation produced by the human visual system. This work aims to develop and study some methods used for the characterization of complex networks. Thus, a new approach to the dermatoscopic image analysis that combines extraction of superpixels and detection of communities of a complex network is expected to be developed. To reduce the computational cost, a SLIC preprocessing algorithm will be used to group several pixels of the image into a uniform region (superpixels), which will decrease the size of the network and, consequently, minimize the computational cost of the cluster. The proposed network construction strategies will be analyzed through topological measurements and will be validated through supervised classification.