Segmentation of skin lesions by watershed using Mumford-Shah in the seeding process

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In this work, image regions are segmented using the Mumford-Shah method. Thus, each region is elastically modeled by a set of image pixels and the segmentation process is driven by image forces until the region becomes steady. Then, a merging algorithm based on the usual intensity of lesion-image pixels is applied to connect the lesion areas previously segmented. The contour of the merged regions approximates the lesion border, but needs further refinements in order to conveniently represent the desired border, particularly in terms of irregularity that is over smoothed. To overcome this problem, the watershed method is used considering points on the smoothed contour as seeds. This computational approach successfully detects regions on the injured skin and extracts their contours maintaining the original irregularity.