

A Multi-Stage Framework with Context Information Fusion Structure for ...

In this work, we propose a framework employing multi-stage UNet's (MS-UNet) in the auto-context scheme to segment skin lesion accurately end-to-end. This computer-aided diagnosis (CAD) systems can highly improve the reliability and efficiency of melanoma recognition. We apply two approaches to boost the performance of MS-UNet. First, UNet is coupled with a context information fusion structure (CIFS) to integrate the low-level and context information in the multi-scale feature space. Second, to alleviate the gradient vanishing problem, we use deep supervision mechanism through supervising MS-UNet by minimizing a weighted Jaccard distance loss function. Three out of five commonly used performance metrics, including Jaccard index and Dice coefficient, show that our approach outperforms the state-of-the-art deep learning based methods on the ISBI 2016 Skin Lesion Challenge data set.

Domain: Image Processing - Image Segmentation

Technology: MATLAB