

عنوان مقاله:

GSOM: A New Interactive Semi-Supervised Approach to Segmentation Suspicion Lesions in Breast MRI Using Self-Organizing Map and Gossip-Based Protocol

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خلاصه مقاله:

Breast cancer is a major public health problem for women in the Iran and many other parts of the world. Medical image segmentation using Pixel classification methods have been frequently considered with two supervised and unsupervised approaches. Supervised segmentation methods lead to high accuracy, but they need a large amount of labeled data which is hard, expensive, and slow to be obtained. On the other hand, unsupervised segmentation methods need no prior knowledge and lead to low performance. However, semi-supervised learning (SSL) represents a midpoint between supervised and unsupervised learning. SSL aims at incorporating a small amount of preclassified data into unsupervised learning methods in order to increase performance. In this paper, we propose a new interactive semi-supervised approach to segmentation of suspicious lesions in breast MRI using self-organizing map (SOM) and Gossip-based protocol (GSOM). This approach based on label propagation in trained SOM using Gossip-based protocol. Experimental results show that the performance of segmentation in this approach is higher than supervised and unsupervised methods such as K.N.N, Bayesian, SVM and Fuzzy c-Means.

کلمات کلیدی:

Breast lesion segmentation, Self-Organizing Map, Gossip-based protocol, Semi-supervised learning, MR imaging

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