3D reconstruction for volume of interest in computed tomography laser mammography images

ABSTRACT

Computer assisted diagnosis systems (CADs) is now commonly used as a second opinion to help radiologists in image interpretation by emphasizing on the suspicious areas. Segmentation of region of interests in 2-dimensional (2D) or volume of interests in 3-dimensional (3D) images is a critical step in CAD systems. 3D image segmentation using 2D slices has been a keen of interest for research purpose. In this paper we propose to reconstruct a 3D form of volume of interests (VOIs) from a series of 2D images in computed tomography laser mammography (CTLM). In this paper, a 3D Fuzzy C-Means clustering have been implemented to reconstruct VOIs for breast cancer detection in CTLM images. To assess the accuracy of the extracted VOIs against ground truth, percentage error factor is used and produced error value of 10.72% in our dataset of 62 CTLM breast images collected among Malaysian participants.

Keyword: 3D reconstruction; Computed tomography laser mammography (CTLM); Computer aided diagnosis (CAD); Segmentation