
Abstract

To proceed in early detection against tumors spreading in the body, a bone scan image segmentation must be done. By doing this, calculating the index which represents the spreading of the tumor, Bone Scan Index, can be accomplished to help in the case. Several experiments such as Computer Aided Diagnosis (CAD), an application developed by EXINI, the development of Active Shape Model (ASM), and Constrained Local Model (CLM) has been made in this case. However, these models still rely on landmark points for their training phase instead of using masks for the annotations. DeepLab, a recent segmentation model, extracts local features using its convolutional approach. Segmenter, a new approach using attention approach, can parallel the process of extracting global contextual information. Dual Attention Network (DANet) uses a uses both approaches to extract both local and global context. In this research, DANet will be used to design a bone scan image segmentation model. All models are trained using the bone scan dataset divided into anterior and posterior groups. 12 different bone regions will be classified and annotated. The results show that the convolution-attention approach of DANet outperformed existing models in both the anterior and posterior sections. A performance of 76.85% mIoU is achieved in the anterior section, and 80.99% mIoU is achieved in the posterior section.

Keywords: bone scan image, segmentation, Dual Attention Network, convolution, attention, DeepLabv3+, Segmenter
