Abstract

Cancer is still a problem in Indonesia for both the country and its sufferer. A way to reduce the impact of this problem is to detect the presence of cancer early on. For detecting the presence of cancer in the bones, we have to perform a whole-body bone scan and segment it afterward. In many studies about whole-body bone scan images segmentation, the data usually comes from one source. Therefore, data scarcity problems may occur. The idea of using different sources may have an impact since there are size differences in bone geometry between different ethnicities. In this study, a system that can segment whole-body bone scan images automatically is proposed. The system is designed by using the Btrfly-Net method. Furthermore, the impact of using cross-domain dataset and augmentation methods is observed. The result shows that the system can segment bone scan with 0.856 and 0.780 dice coefficient score using the Btrfly-Net and U-Net methods, respectively. Moreover, augmentation method could increase the Btrfly-Net system metric over 1% while decreasing U-Net system metric over 2-6%. The decreasing metric occurrence in the U-Net system is not caused by the augmentation method directly. Furthermore, there are metric differences in using cross-domain dataset over 3-6%. However, further analysis shows that the cross-domain themselves do not cause the differences.

Keywords: Btrfly-Net, Cancer, Ethnic, Image Segmentation, Whole-Body Bone Scan