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Title	Deep learning techniques for synthetic CT generation: a single model for multiple anatomical sites
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Abstract

Cone-beam computed tomography (CBCT) images illustrate the patient's anatomical information during the course of radiation treatment. It could be used to assess the actual dose for the patient. However, CBCT has limitations due to poor image quality and uncertainty of Hounsfield Unit (HU) values. This study aims to compare the efficiency of two deep learning techniques, U-Net with ResNet encoder and GAN, to translate CBCT images to the level of CT images while preserving the anatomical structure as on CBCT images. The models were trained with three anatomical sites: head, head and neck, and pelvis. The similarity measures were used to evaluate in each region. The results showed that the synthesized CT generated from both models illustrated an improvement in image quality, although the U-Net model with ResNet encoder performed slightly better than the GAN models for all treatment sites.