Sharpness-aware low-dose CT denoising using conditional generative adversarial network

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Abstract

Low Dose Computed Tomography (LDCT) offered benefits in the radiation restricted applications, but the quantum noise due to less number of photons produce a noised image thus produce a blur image. They proposed a Conditional GANs based image reconstruction which produce a denoised image with a small loss in the quality but achieves better performance.

Introduction

The use of the Computed Tomography (CT) has rapidly increased due to economically better and performance, but its rapid use lead to significant concern regarding radiation exposure.

To reduce the radiation impact radiation dose is lowered but due to this it generates more noise then the conventional CT. So, for this they proposed the possibility of applying GAN (SAGAN) on the LDCT denoising which lead to a sharper image for the better detection and diagnosis.

Survey

The sharpness detection network is trained to compute the sharpness metric which is not very sensitive to just noticeable blur which could lead to the final sharpness of the denoised image especially for some low contrast region.

And the training is done on the specific dosage level, and the analysis is based on the visual quality assessment of the denoised image.