

Peer Review

Review of: " ρ -NeRF: Leveraging Attenuation Priors in Neural Radiance Field for 3D Computed Tomography Reconstruction"

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ρ -NeRF introduces a new method that leverages Attenuation Priors in Neural Radiance Field for 3D Computed Tomography Reconstruction for efficient and high-quality CT imaging using sparse-view X-ray data.

The general writing of the article is easy to understand, and it also provides relatively sufficient experimental results.

But I have questions/suggestions about some of the content:

1. In the introduction, the author notes that NeRF models are primarily designed for reflective imaging. However, NeRF has also been successfully applied in other scenarios, such as Block-NeRF [Tancik et al., 2022], which is used to represent large scenes.
2. Figure 1 is difficult to follow and lacks clarity. It fails to depict the novel view synthesis process involving nearest neighbor points and trilinear interpolation. Moreover, crucial details regarding the initialization and update of attenuation values are not represented in the diagram.
3. The Method section lacks a detailed explanation of the novel view synthesis process.
4. In the experiment section, it is recommended to use the three-line table format for the tables to enhance their visual appeal.
5. In Figures 3 and 4, compared to ρ -NAF and SAX-NeRF, the performance improvement of ρ -NeRF appears to be relatively limited.
6. The explanation of the Model Complexity Analysis and Table 4 is unclear in demonstrating the effectiveness of your approaches. It is recommended to use a clearer way to show the comparison

of computational efficiency between your method and the baseline. For example, in GMACs, ρ -NAF has only 0.9463 but you are 12.8177, and your approach also has more parameters than ρ -NAF.

Declarations

Potential competing interests: No potential competing interests to declare.