Supplementary Material for [RoomNeRF: Representing Empty Room as Neural Radiance Fields for View Synthesis]

ManKyu Kong
mangyu0929@yonsei.ac.kr
Seongwon Lee
won4113@yonsei.ac.kr
Euntai Kim
etkim@yonsei.ac.kr

School of Electrical and Electronic Engineering
Yonsei University
Seoul, Korea

S1 Additional Ablation Studies

In this section, we introduce the additional ablation studies that could not be included due to the space limitations of the main paper.

Ablation studies on Feature Representation. The pattern transfer is performed on the feature representation between the inpainted region and the visible region. Therefore, we conduct experiments when adjusting the position of the layer where the feature representations are obtained. In Table. 3, the results of pattern transfer using feature representation extracted from layers *relu*1_1, *relu*2_1, and *relu*3_1 of VGG19 are shown.

Table 3: Ablation Studies on Feature Representation.

layer	PSNR(↑)	SSIM(↑)	LPIPS(↓)
*relu*1_1	23.81	0.9134	0.2255
*relu*2_1	23.72	**0.9156**	0.2129
*relu*3_1	**23.82**	0.9148	**0.1546**

Ablation studies on Similarity Threshold. After the searching process, only the most-similar patches over the similarity threshold are transferred to ensure obviously similar patches to be transferred. The results of the ablation studies about similarity threshold values are shown in Table. 4.

Table 4: Ablation Studies on Similarity Threshold

threshold	PSNR(↑)	SSIM(↑)	LPIPS(↓)
0.55	23.81	0.9106	0.1667
0.65	23.81	0.9112	0.1654
0.75	**23.82**	**0.9148**	**0.1546**
0.85	23.76	0.9117	0.1650
0.95	23.71	0.9142	0.1625

S2 Additional Qualitative Results

In this section, we show additional qualitative results of our proposed method RoomNeRF. Fig. 7, Fig. 8, and Fig. 9 show the additional qualitative results compared to object-removing NeRF methods. We also attach the supplementary video showing rendered images and depths of an empty room reconstructed by our proposed method.

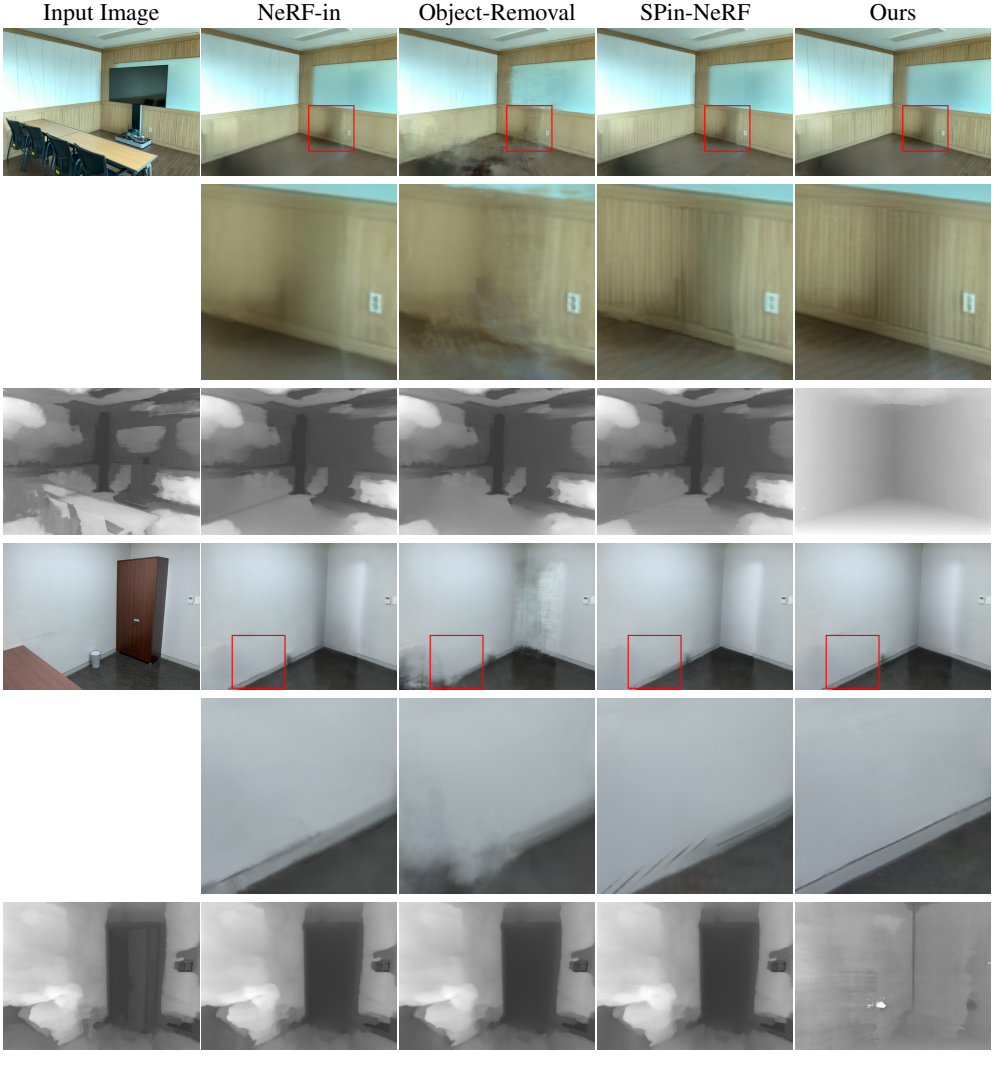

Figure 7: Additional qualitative results on Our RoomNeRF dataset

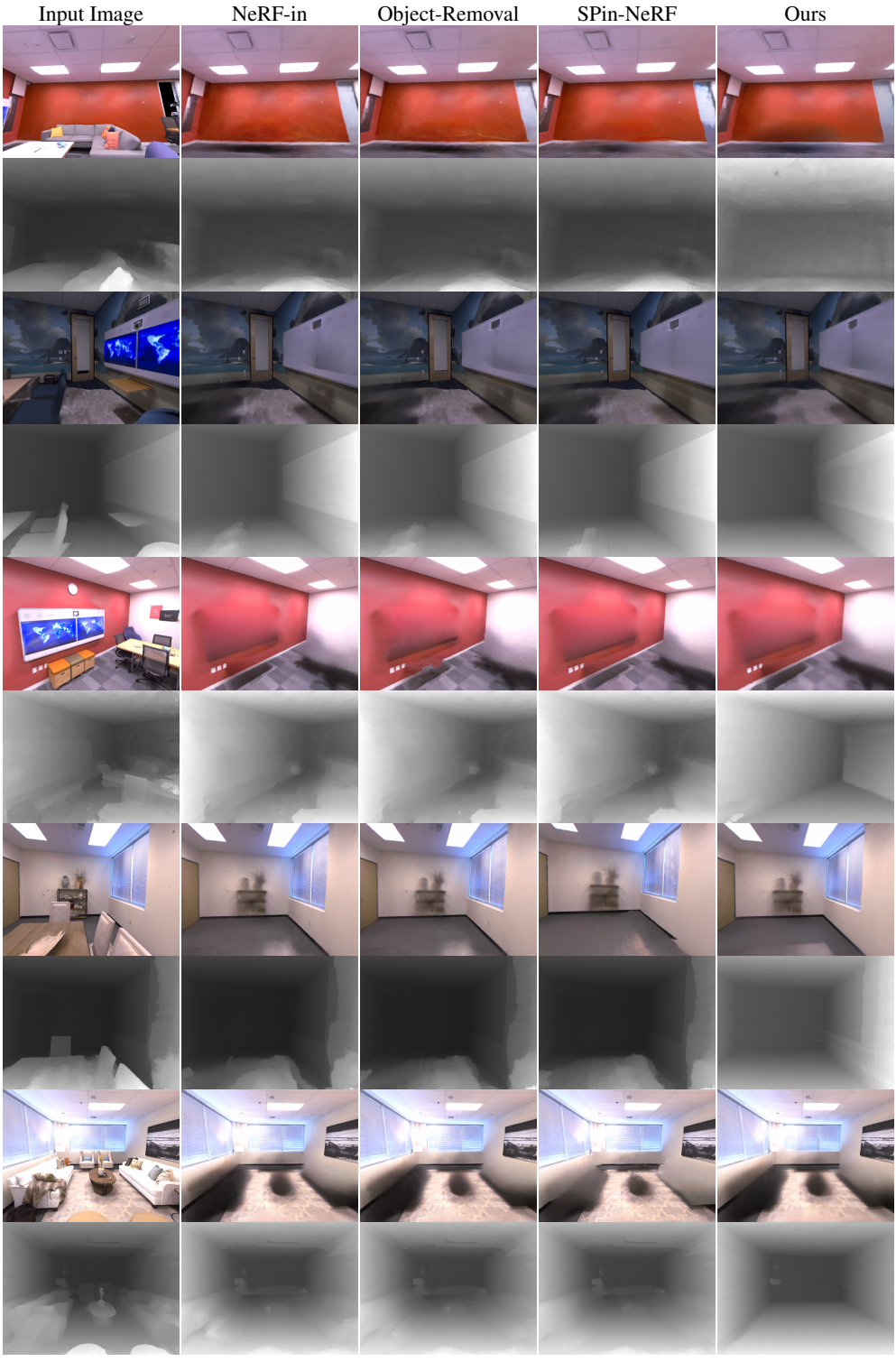

Figure 8: Additional qualitative results on Replica dataset [2]

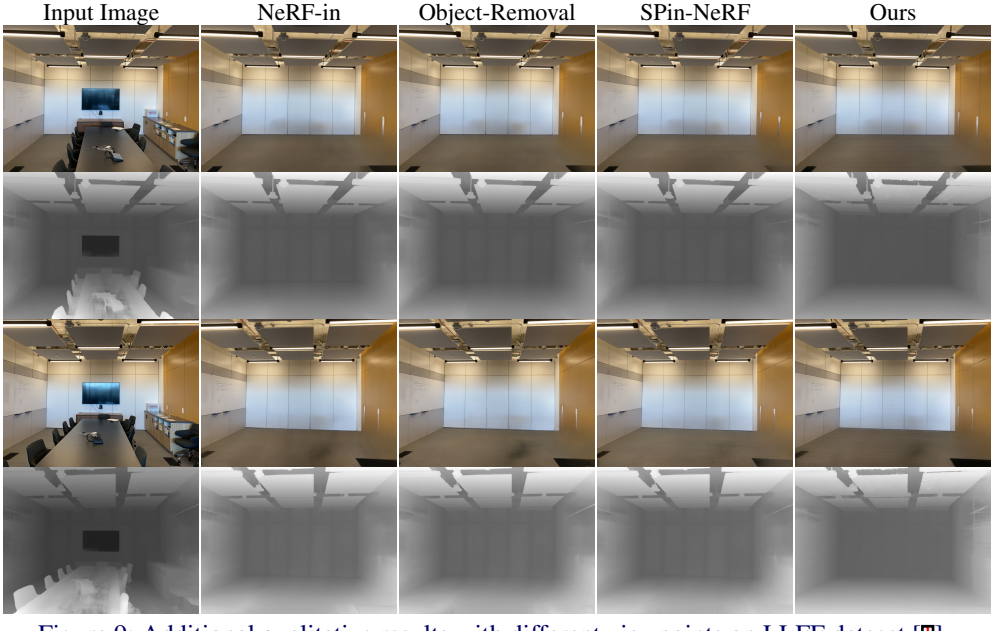

Figure 9: Additional qualitative results with different viewpoints on LLFF dataset [1]

References

[1] Ben Mildenhall, Pratul P Srinivasan, Rodrigo Ortiz-Cayon, Nima Khademi Kalantari, Ravi Ramamoorthi, Ren Ng, and Abhishek Kar. Local light field fusion: Practical view synthesis with prescriptive sampling guidelines. *ACM Transactions on Graphics (TOG)*, 38(4):1–14, 2019.

[2] Julian Straub, Thomas Whelan, Lingni Ma, Yufan Chen, Erik Wijmans, Simon Green, Jakob J Engel, Raul Mur-Artal, Carl Ren, Shobhit Verma, et al. The replica dataset: A digital replica of indoor spaces. *arXiv preprint arXiv:1906.05797*, 2019.