Supplementary Material

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Figure 1. **LLFF qualitative results**. We can notice that both BARF and full positional encoding cannot find appropriate camera poses.

1. Result of the LLFF Dataset

Figure 1 and Table 1 shows qualitative results and quantitative result, respectively. We can notice that the result of both BARF and full positional encoding is poor. This is because we use world coordinates unlike the original paper uses normalized world coordinates. Since if we do not use normalized world coordinates, since the near and far of the scene are big, the model can be confused to finding accurate camera position. Also, since all camera poses are initialized at the center of world coordinates, the model becomes much harder to find accurate camera poses. This is why BARF does not works well for the LLFF dataset in our implementation.

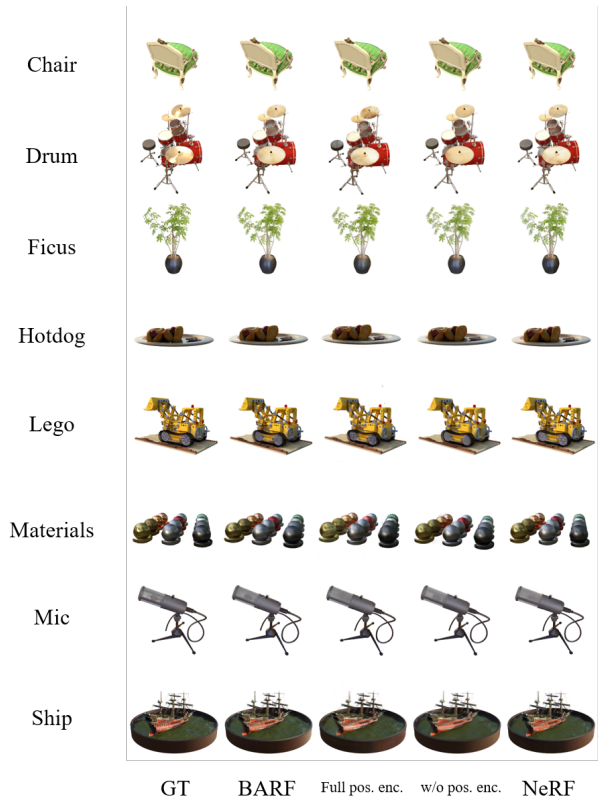

Figure 2. **Blender qualitative results**. Unlike original paper, full-positional encoding produces fine results in our implementation

2. More Qualitative Results

Qualitative results of all objects is shown in Figure 1, Figure 2. As mentioned in Section 1, LLFF results is not that good. But you can notice that overall Blender results are fine.

Scene		Camera pose registration				View synthesis quality								
		Rotation (°)		Translation		PSNR			SSIM			LPIPS		
		full	BARF	full	BARF	full	BARF	NeRF	full	BARF	NeRF	full	BARF	NeRF
Fern	rep	74.452	0.191	30.167	0.192	9.81	23.79	23.72	0.187	0.710	0.733	0.853	0.311	0.262
	ours	94.238	0.4272	6.97	0.22	6.49	16.76	24.38	0.406	0.524	0.842	0.783	0.341	0.223
Flower	rep	2.525	0.251	2.635	0.224	17.08	23.37	23.24	0.344	0.698	0.668	0.490	0.211	0.244
	ours	13.962	25.311	1.37	8.30	9.37	8.99	26.44	0.264	0.304	0.868	0.675	0.745	0.140
Fortress	rep	75.094	0.479	33.231	0.364	12.15	29.08	25.97	0.270	0.823	0.786	0.807	0.132	0.185
	ours	154.04	0.875	35.19	0.79	17.77	6.30	26.00	0.334	0.592	0.819	0.720	0.320	0.235
Horns	rep	58.764	0.304	32.664	0.222	8.89	22.78	20.35	0.158	0.727	0.624	0.805	0.298	0.421
	ours	24.479	1.196	9.07	0.41	7.98	9.75	23.03	0.381	0.380	0.782	0.811	0.531	0.381
Leaves	rep	88.091	1.272	13.540	0.249	9.64	18.78	15.33	0.067	0.537	0.306	0.782	0.353	0.526
	ours	15.822	4.727	1.44	0.48	8.54	9.34	16.96	0.160	0.174	0.519	0.786	0.620	0.503
Orchids	rep	37.104	0.627	20.312	0.404	9.42	19.45	17.34	0.085	0.574	0.518	0.806	0.291	0.307
	ours	41.235	83.919	10.27	17.19	7.77	7.07	18.48	0.184	0.145	0.663	0.740	0.794	0.258
Room	rep	173.811	0.320	66.922	0.270	10.78	31.95	32.42	0.278	0.940	0.948	0.871	0.099	0.080
	ours	116.819	101.001	24.60	31.51	7.35	8.17	32.73	0.297	0.474	0.974	0.746	0.795	0.049
T-rex	rep	166.231	1.138	53.309	0.720	10.48	22.55	22.12	0.158	0.767	0.739	0.885	0.206	0.244
	ours	150.367	3.280	17.83	0.79	6.90	10.43	26.08	0.297	0.335	0.906	0.779	0.576	0.115
Mean	rep	84.509	0.573	31.598	0.331	11.03	23.97	22.56	0.193	0.722	0.665	0.787	0.238	0.283
	ours	76.370	27.59	13.34	7.46	7.59	11.04	24.26	0.290	0.366	0.797	0.755	0.590	0.238

Table 1. **LLFF quantitative results**. We denote the values reported in the original paper as "reported", and the values obtained by our implementation by "ours". Translation error is scaled by 100.