InNeRF360: Text-Guided 3D-Consistent Object Inpainting on 360° NeRF

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Problem

The implicit volumetric representation of Neural Radiance Fields (NeRF) makes it challenging to remove objects and inpaint visually consistent content for the missing region.

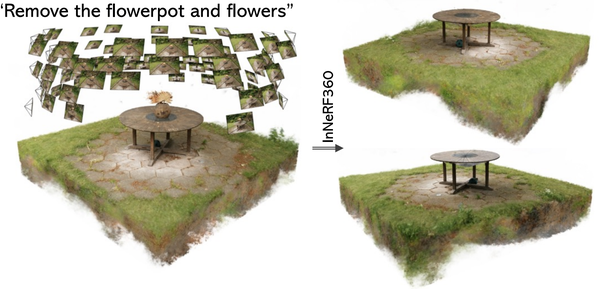
Contributions

InNeRF360 is the first work in text-guided object inpainting on 360° NeRF scenes, achieving perceptually consistent inpainted regions.

Our approach efficiently generates multiview consistent 2D segmentation for 3D object inpainting through depth-warping refinement on initialized masks.

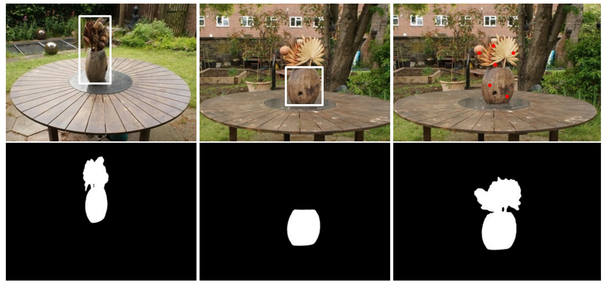
We incorporate a 3D diffusion network as local geometric prior to remove artifacts in the inpainted region.

"Remove the flowerpot and flowers"



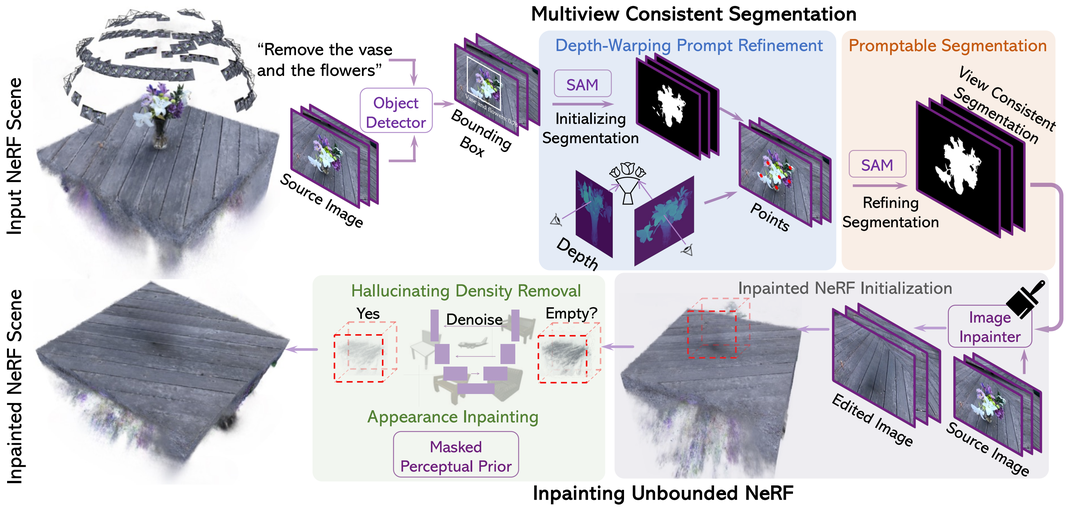
Depth-Warping Prompt Refinement

"Remove the flowerpot and flowers"

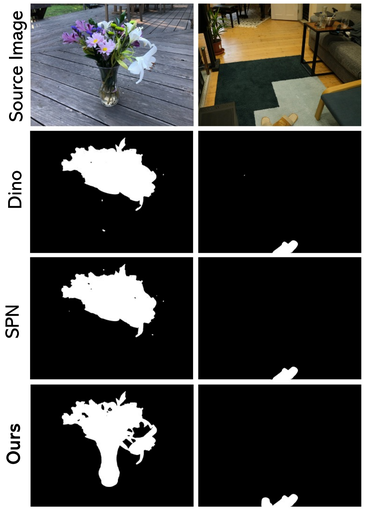


Project Page

Overview of InNeRF360 Framework



3D Object Segmentation



Inpainting 360° Scenes

Extension to Editing

InNeRF360, combined with appropriate mask-conditioned image editing models, can generate accurate editing on desired objects.

Ablation on Geometric and Appearance Priors

Appearance priors (L_{in}) improves inpainted texture and improve blurry background output due to inconsistent 2D inpainting.

Geometric priors (L_{geom}) removes artifacts from view-dependent appearances from individual views.

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