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Towards a Training Free Approach for 3D Scene Editing WACV \$\frac{1}{2025}\$

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Definition and Contributions

Goal: Performing scene edit operations such as insertion, deletion and replacement of objects in 3D scene based on text prompt.

Contributions: Our key contributions are

- 1. We propose a framework, FreeEdit, for text-driven object insertion, replacement, and deletion in 3D scenes without training.
- 2. Our method handles large-scale 3D scenes with multiple objects, enabling flexible, efficient scene editing without positional priors.
- 3. Free Edit includes an algorithm to find optimal object placement with minimal intersection with scene.
- 4. Free Edit supports object insertion, replacement, translation, rotation, iterative edits, and deletion.

Experiments

Refinement	FreeEdit	Baseline
No	4.4%	8.21%
Yes	3.84%	7.45%

Table: Penetration percent of vertices baseline. Lesser the number, better the results

Question	FreeEdit	Baseline
Is primary object placed correctly on grounding object?	4.17	3.02
Rate the look and feel of scene	3.86	2.78
Rate the orientation of primary object	4.17	3.16

proposed method with Table: Results from user study. Higher the number, better the results.

Method

Figure: Overview of proposed method for object insertion

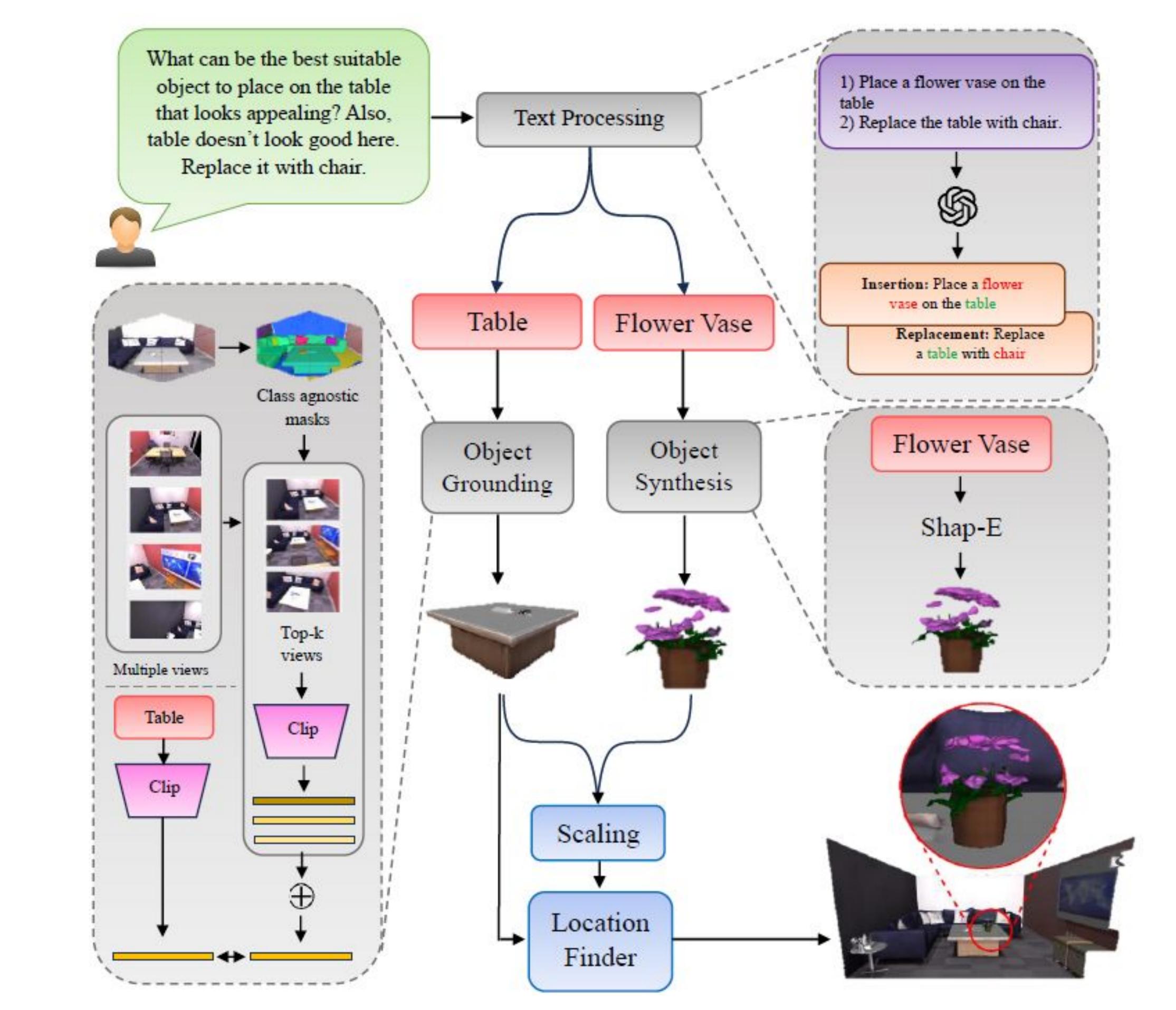
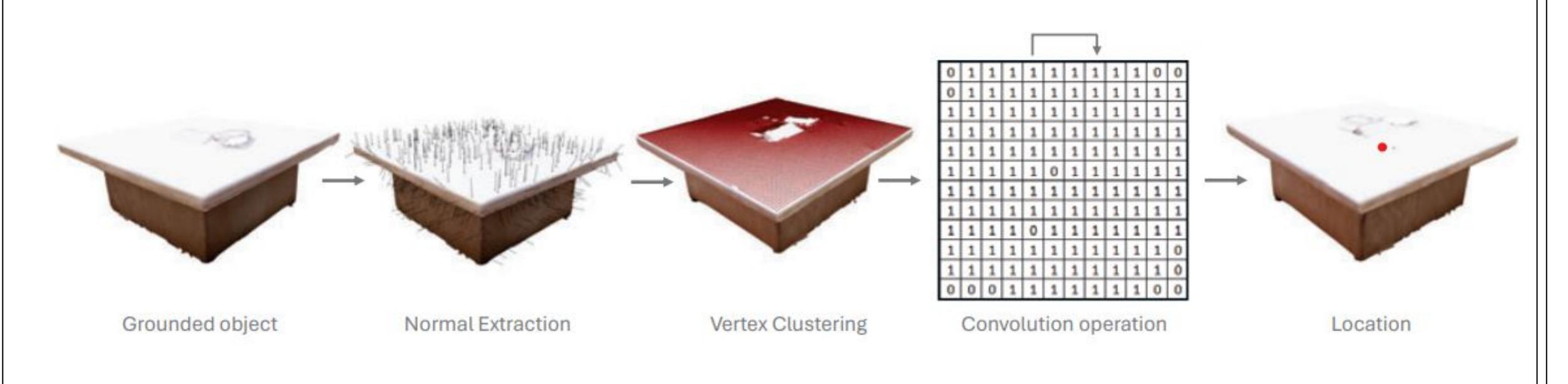


Figure: FreeEdit Algorithm to find optimal location



Results

Figure: Results for object insertion

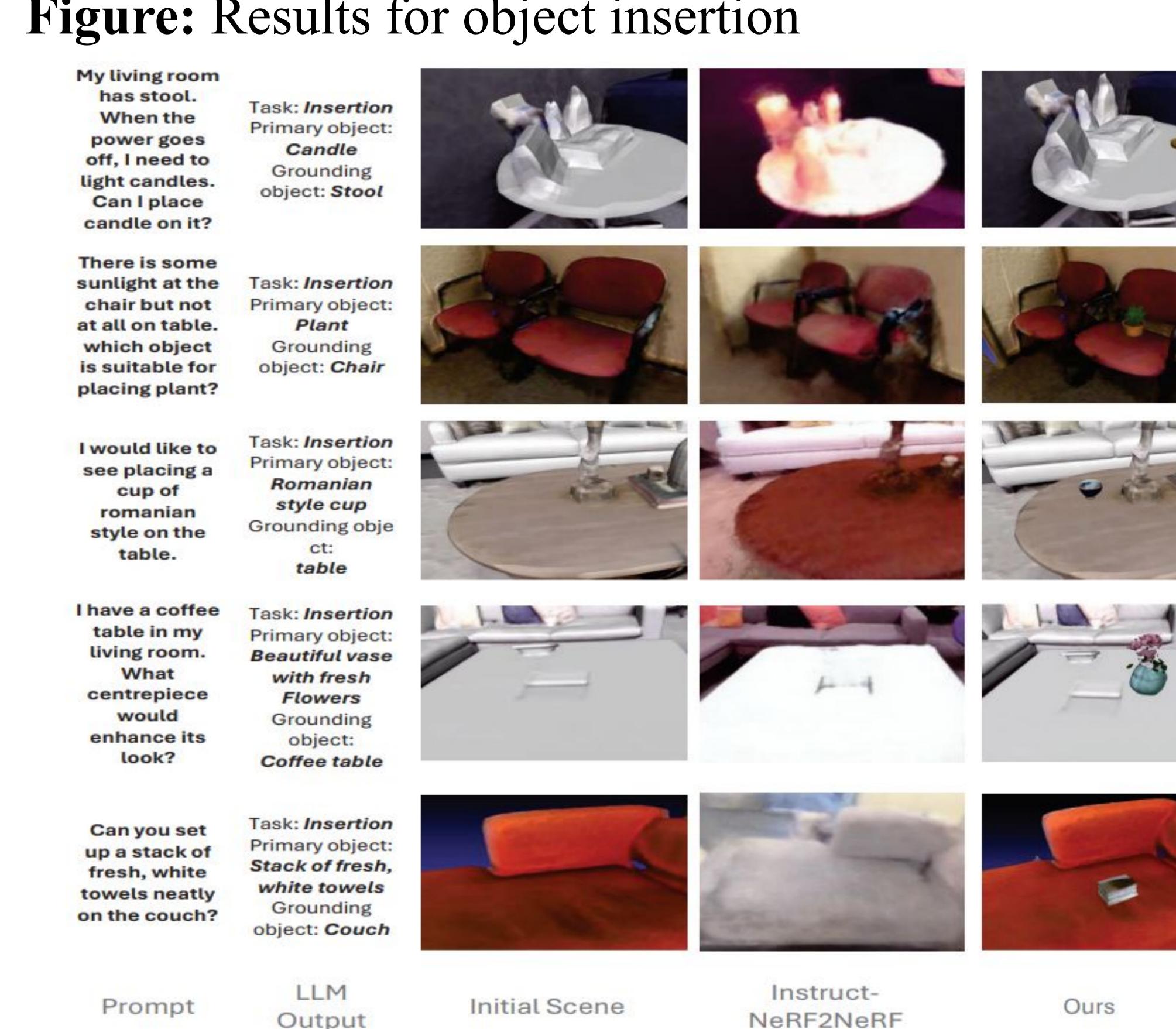
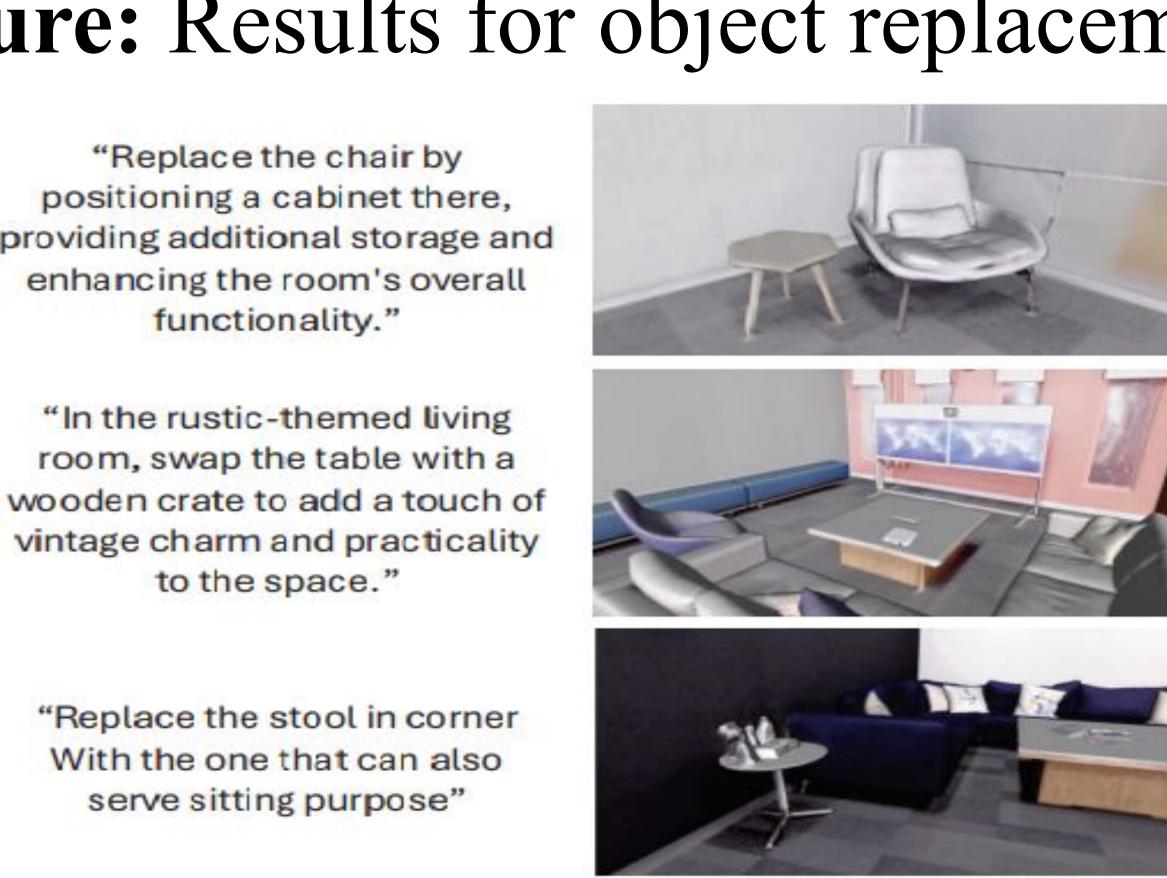
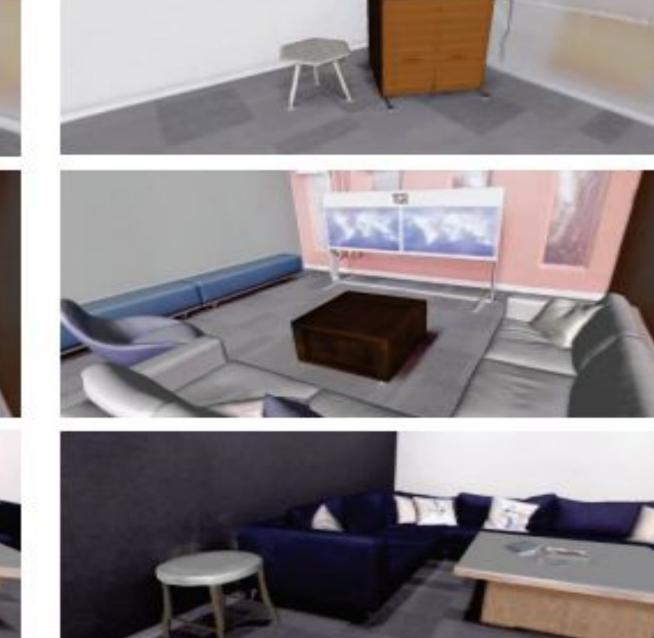


Figure: Results for object replacement







(a) Prompt