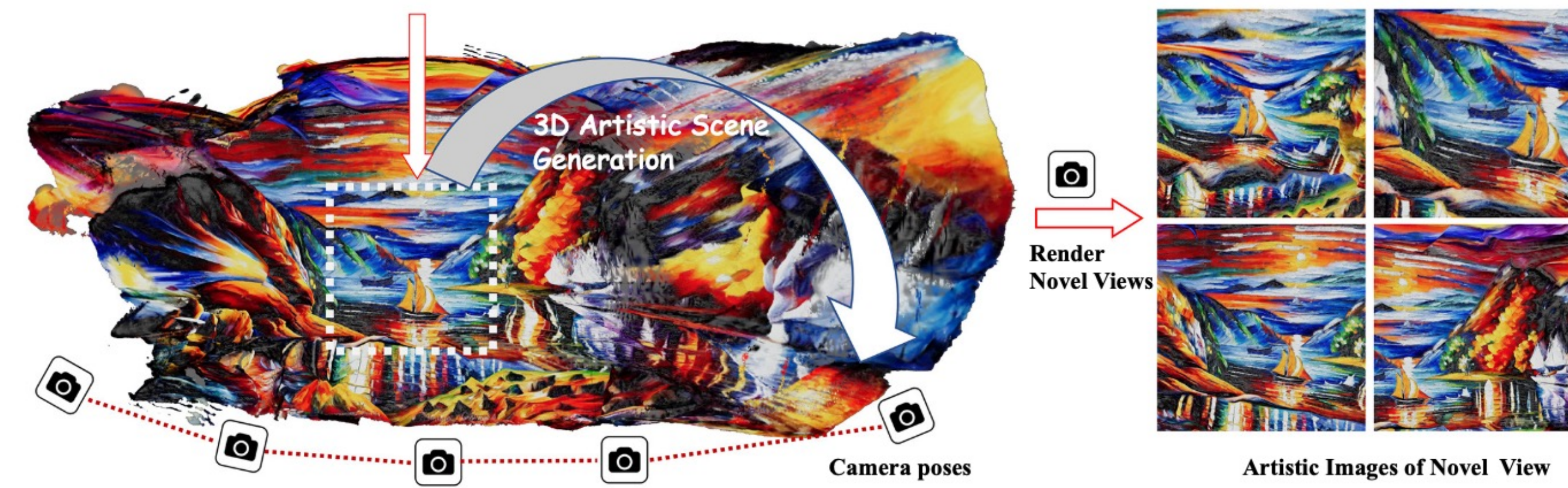


Introduction

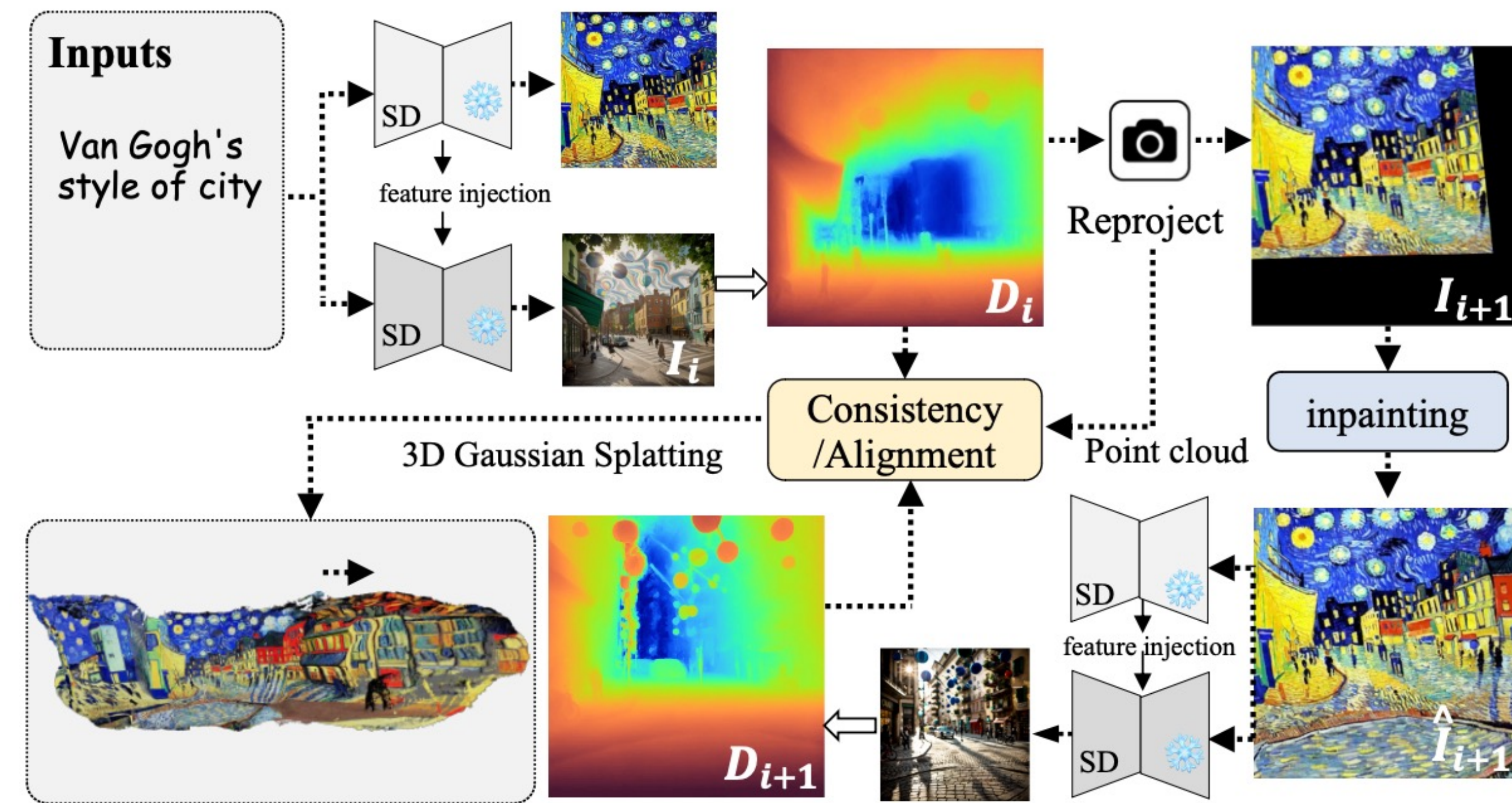
A large of ship in the valley in the style of Leonid Afremov.



In this paper, we explore the existing challenges in 3D artistic scene generation by introducing ART3D, a novel framework that combines diffusion models and 3D Gaussian splatting techniques. Our method effectively bridges the gap between artistic and realistic images through an innovative image semantic transfer algorithm. By leveraging depth information and an initial artistic image, we generate a point cloud map, addressing domain differences. Additionally, we propose a depth consistency module to enhance 3D scene consistency. Finally, the 3D scene serves as initial points for optimizing Gaussian splats.

- We introduce ART3D, which achieves high-quality 3D artistic scene generation through diffusion models and 3D Gaussian splatting techniques.
- Our method compensates for the domain gap between artistic and realistic images through an image semantic transfer algorithm, and the introduction of a depth consistency module improves the overall consistency of global scene generation.
- We innovatively address the generation of high-quality 3D artistic scenes from text or reference images, making a significant contribution to the development of the interdisciplinary field of AI in art creation. You are free to use colored backgrounds and such but they generally reduce readability.

Pipeline

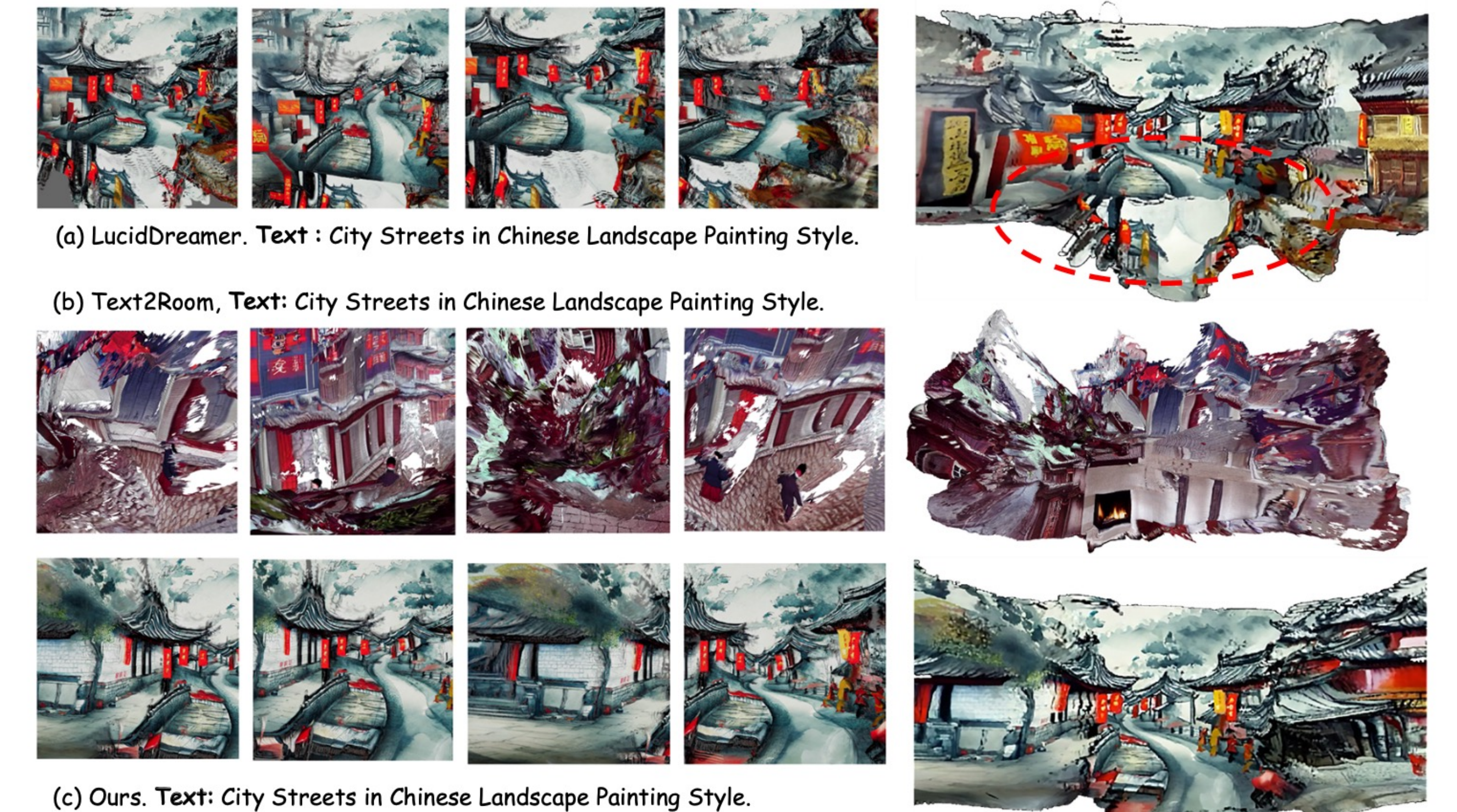


Experiments



Comparison

- To further assess the superiority of our method in text-driven 3D artistic scene generation, we conduct a comparison with another method utilizing the diffusion model for 3D scene generation (Figure 5). In contrast to approaches applied in real-world domains or those closely simulating real-world texture, our method produces more continuous multi-view images and more consistent and plausible 3D scenes.



Conclusion

ART3D represents an advancement in AI-driven 3D art creation. By effectively addressing challenges in domain gaps and global scene consistency, our approach, utilizing diffusion models and 3D Gaussian splatting, excels in generating high-quality 3D artistic scenes from textual descriptions. Beyond quantitative metrics, ART3D significantly contributes to the intersection of AI and art by providing a novel solution for creating visually appealing 3D scenes.