DeSRF: Deformable Stylized Radiance Field

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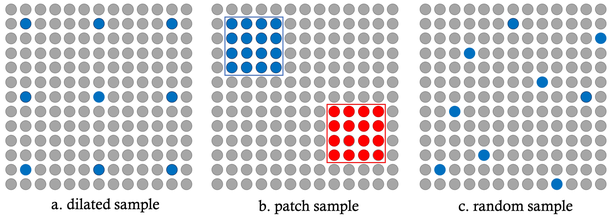
Motivation

- **Geometric trait** of the artistic images is also a critical feature when style transfer besides the low-level style.
- **Resolution:** when stylizing 3D scenes, the style loss needs to be calculated for the entire image, where the network needs to render the full-resolution from different views. This is a contradictory and time-consuming process.

Main Contributions

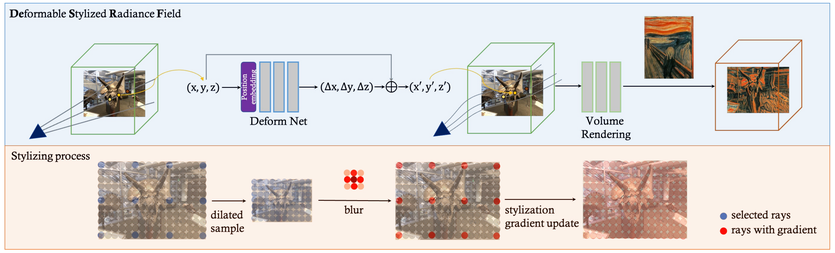
- We propose a novel framework for 3D scene stylization not only learns the style representation but also the geometric changes that also be an important component of style using a deformable network.
- First to produce reasonable and deformed style scenes for radiance fields
- We introduce an efficient training strategy and dilated ray sampling that alleviates both the memory and time burden when stylizing the radiance fields
- **DeSRF** can stylize high-resolution scenes at size 756 x 1008.

Different Ray Sample Methods When Stylizing

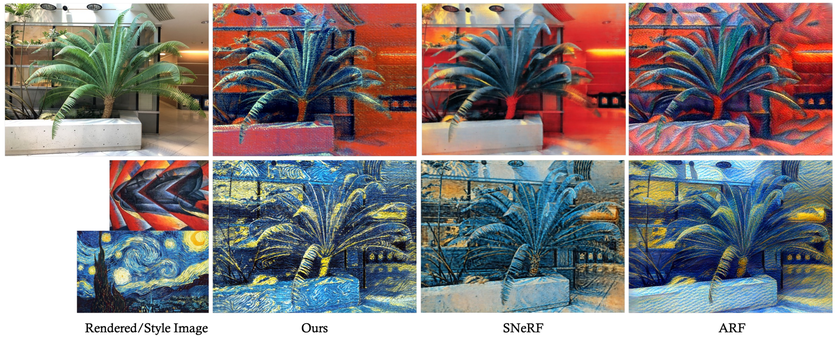


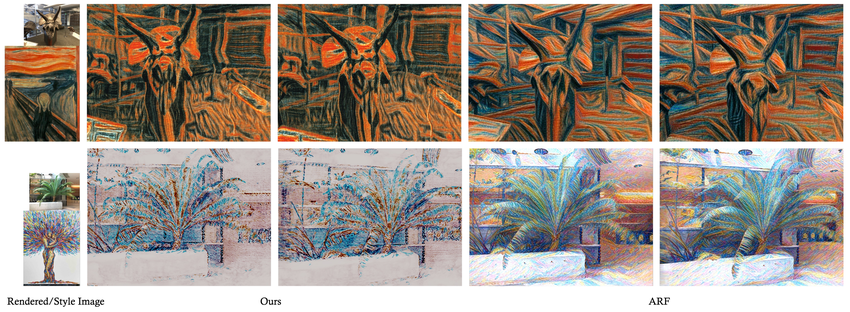
Dilated Sample helps reduce the number of rays to be rendered when stylizing

Pipeline

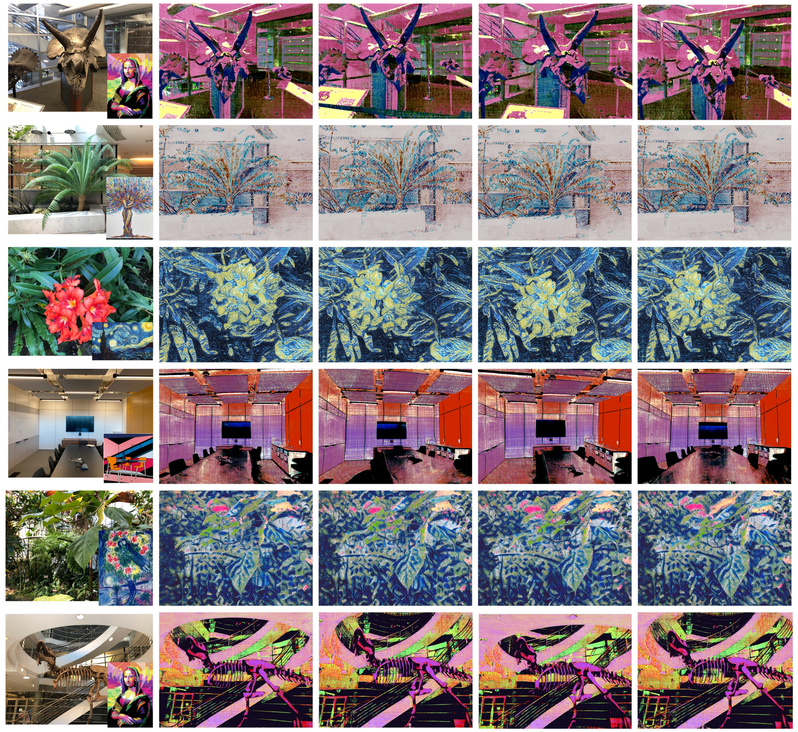


Comparison





Experiments



Conclusion

We propose DeSRF, a deformable stylized radiance field to achieve high-fidelity and efficient style transfer from a given 2D style image to arbitrary 3D scenes.

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