



UNIVERSITY OF
TORONTO **Adobe**

Text-guided Controllable Mesh Refinement for Interactive 3D Modeling

Yun-Chun Chen^{1,2} Selena Ling^{1,2} Zhiqin Chen² Vladimir G. Kim² Matheus Gadelha² Alec Jacobson^{1,2}



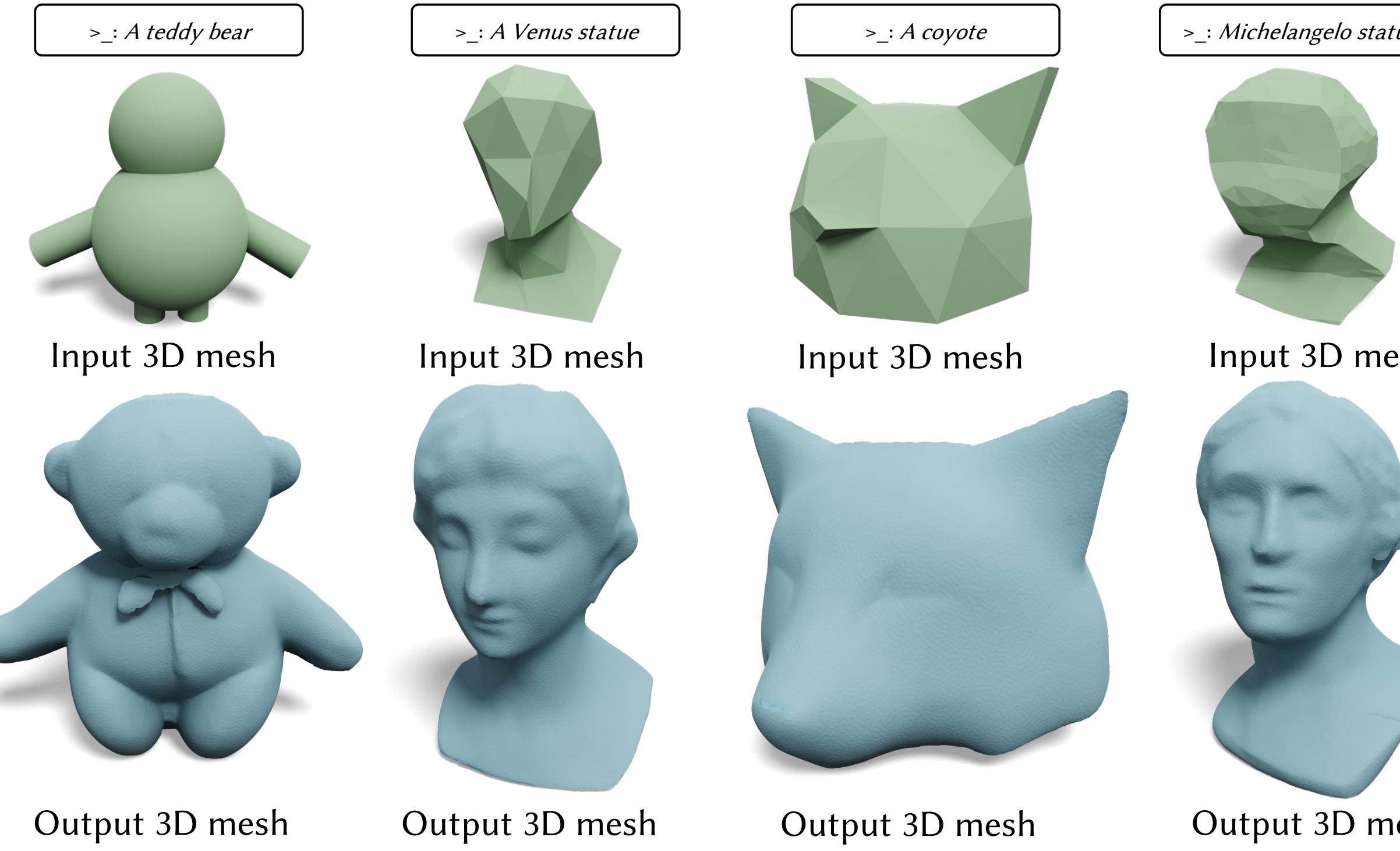
¹University of Toronto

²Adobe Research

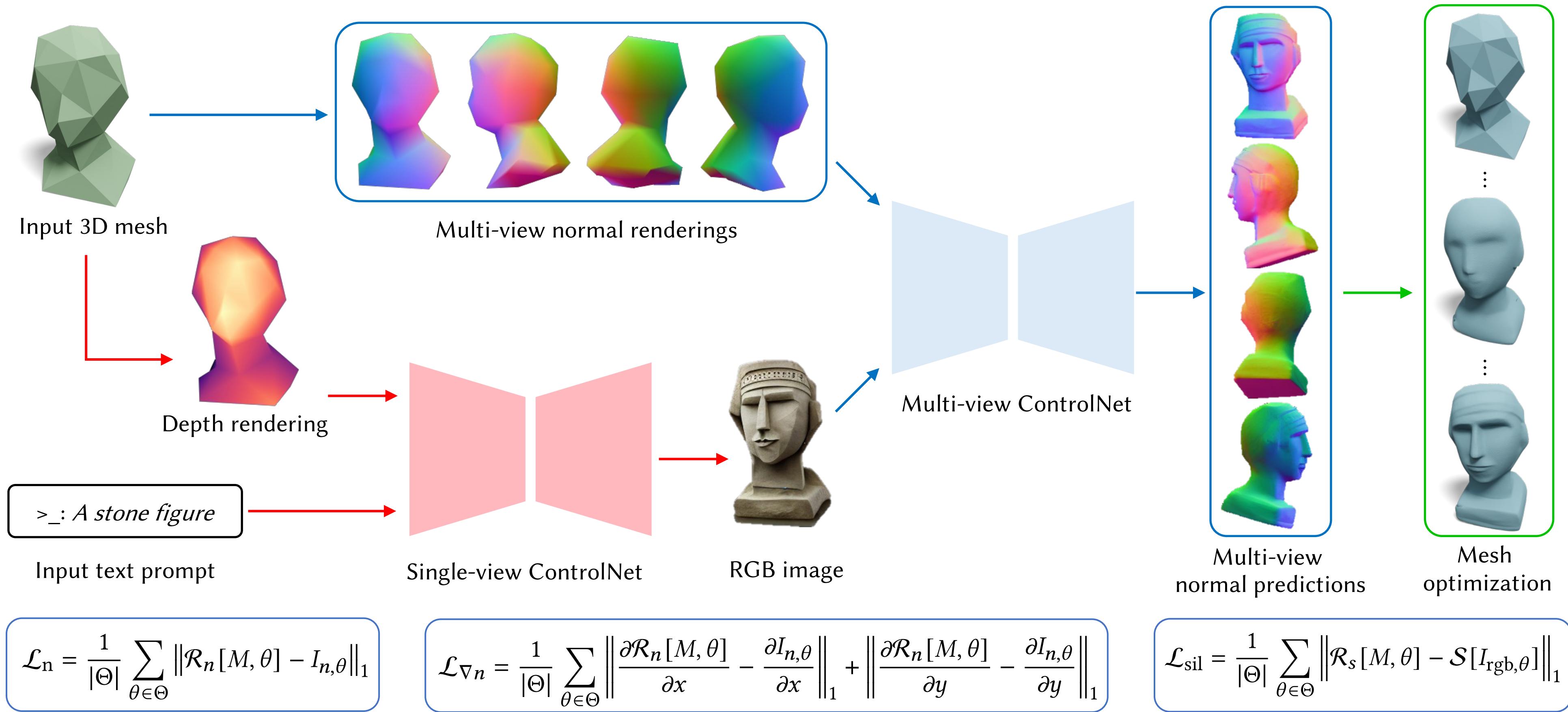
text-mesh-refinement-project.github.io

Text-guided Mesh Refinement

- Input: A coarse 3D mesh and a text prompt
- Goal: Create a 3D mesh by adding more geometric detail to the input coarse mesh guided by the input text prompt

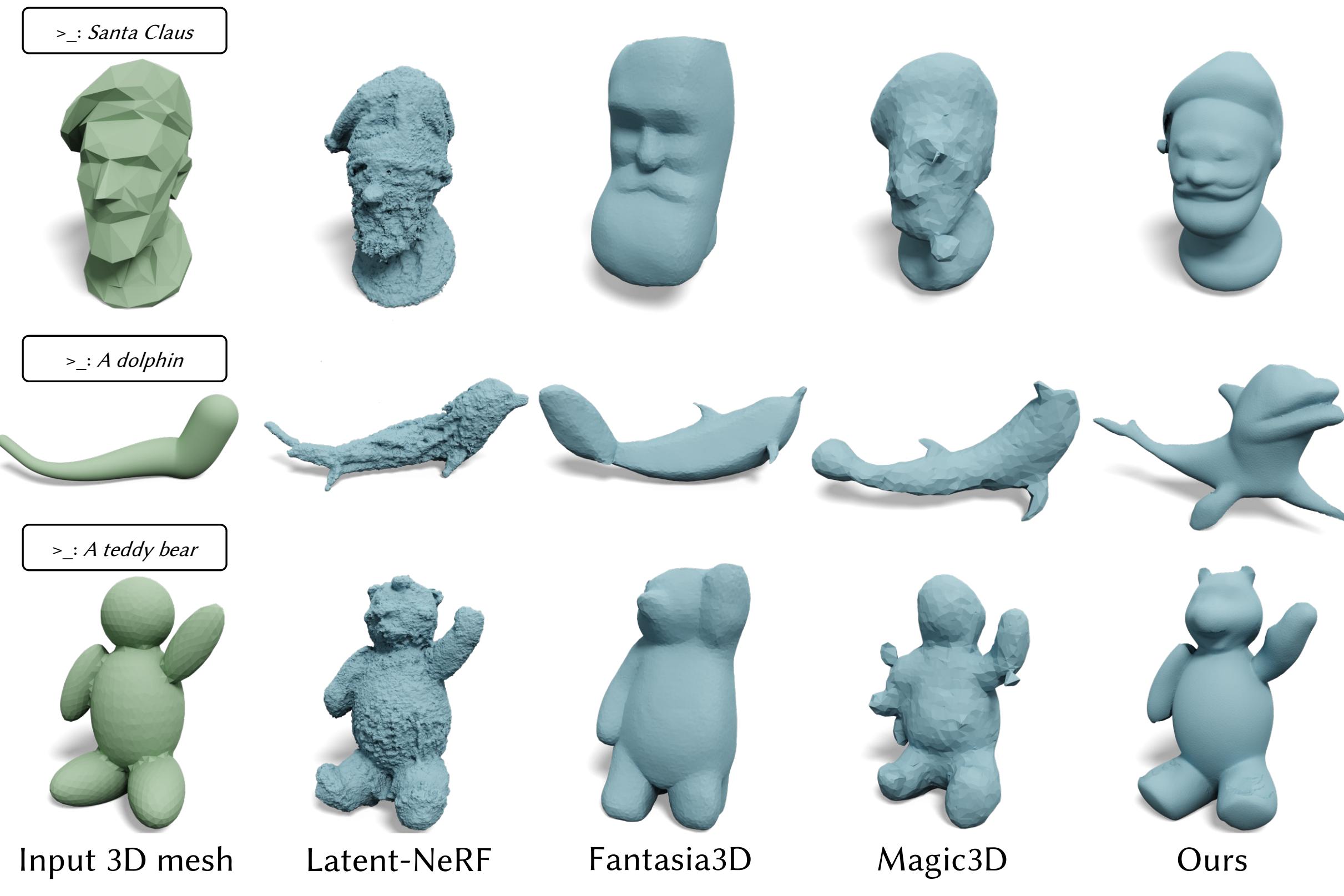


Method Overview



Experimental Results

Comparison to state-of-the-art methods



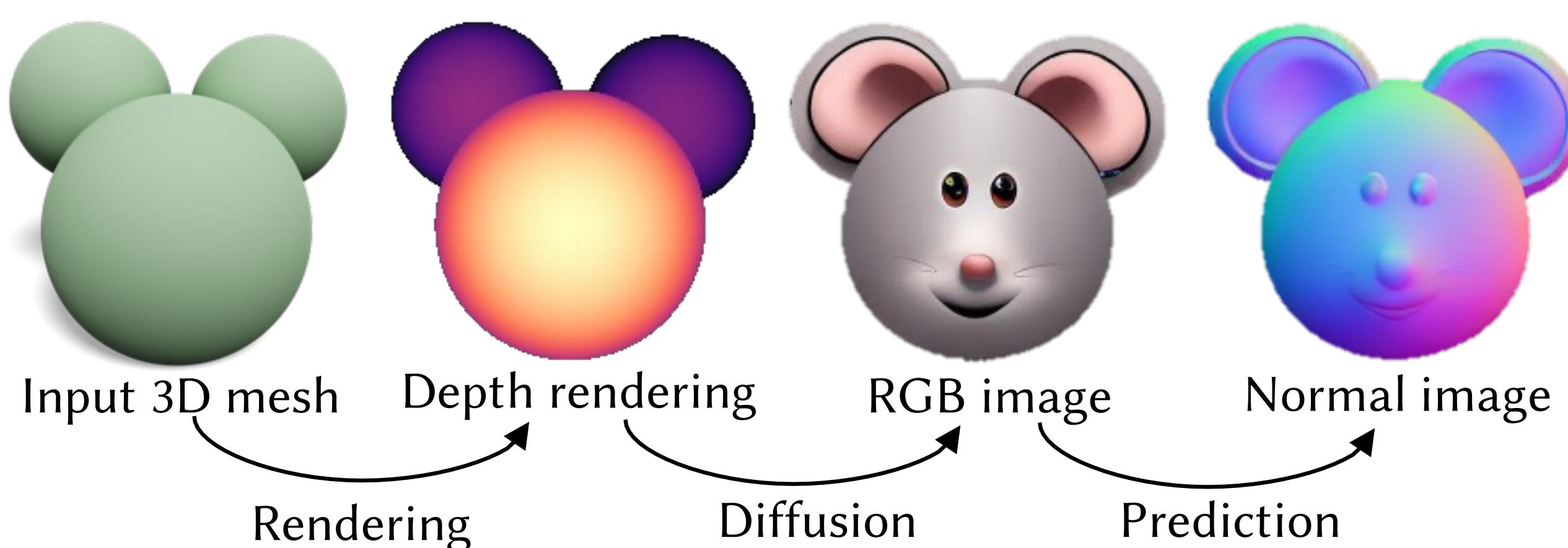
Controlling pose with 3D input

Mesh texturing

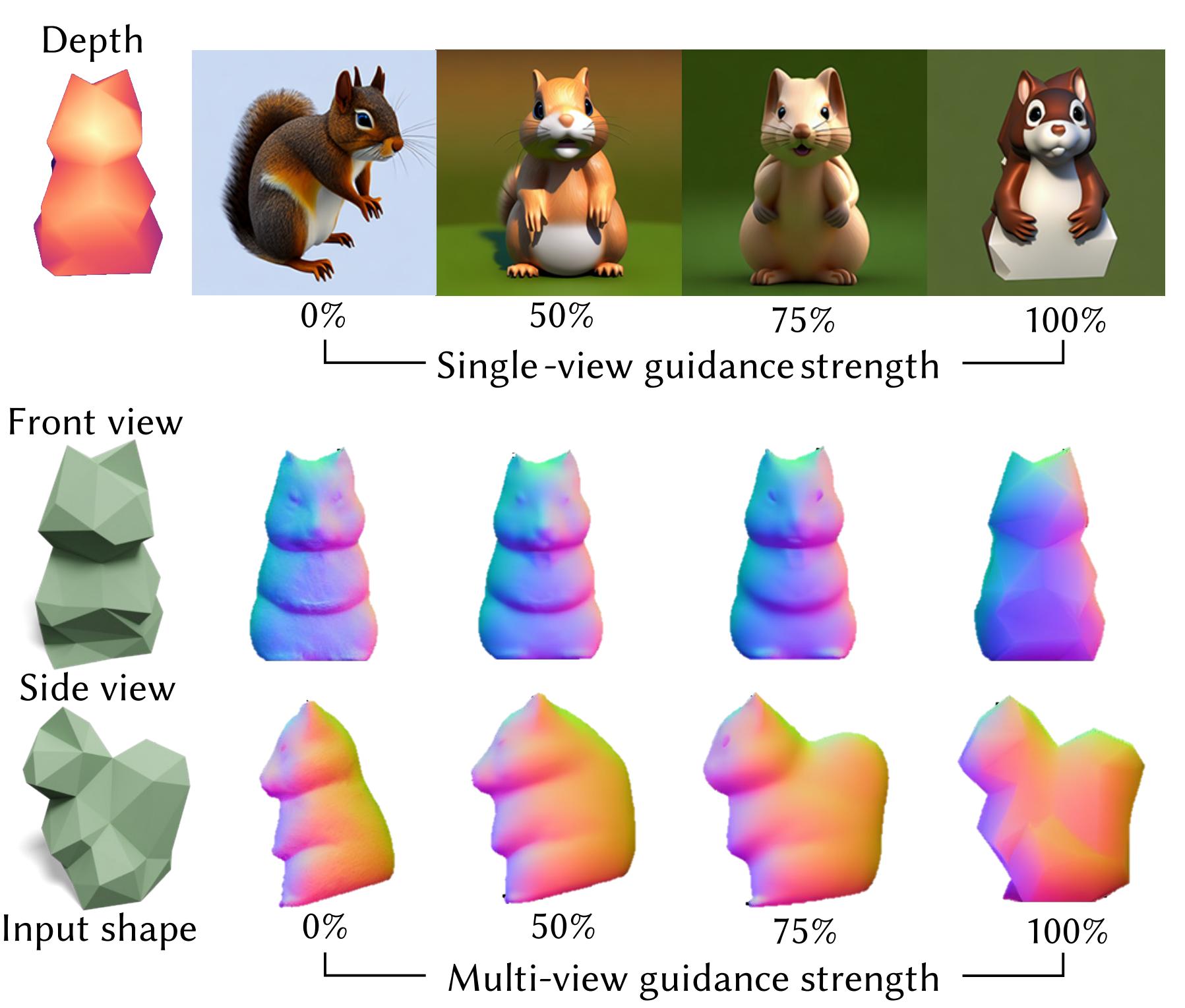


Key Insight

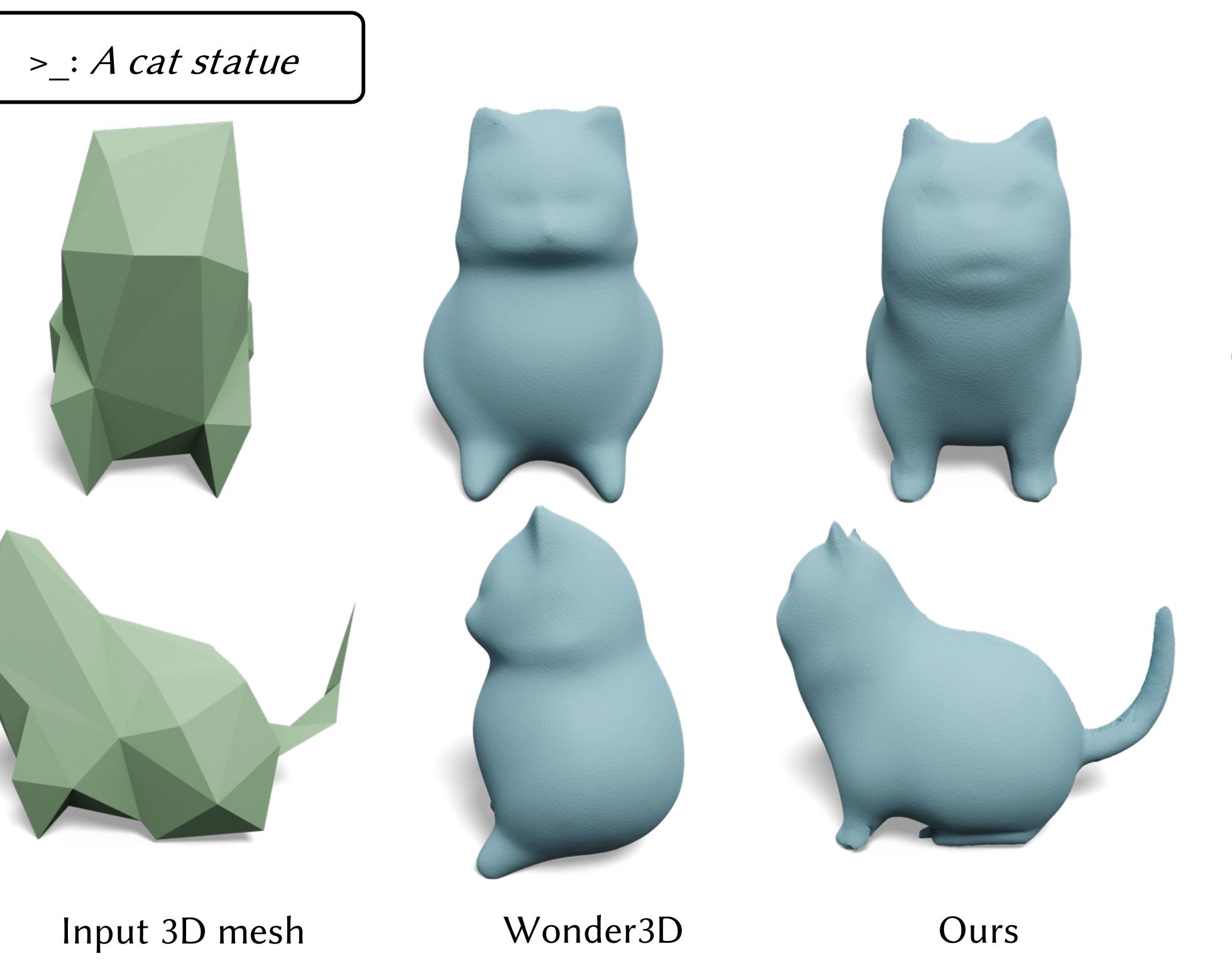
- Pre-trained text-to-image models generate images with rich geometric detail
- First stage: Single-view RGB generation for fast preview
- Second stage: Multi-view normal generation
- Third stage: Mesh optimization



Influence of Guidance Strength



Multi-view Control



References

- Palfinger. Continuous Remeshing for Inverse Rendering.
- Lin et al. Magic3D: High-Resolution Text-to-3D Content Creation.
- Long et al. Wonder3D: Single Image to 3D using Cross-Domain Diffusion.
- Zhang et al. Adding Conditional Control to Text-to-Image Diffusion Models.
- Metzger et al. Latent-NeRF for Shape-Guided Generation of 3D Shapes and Textures.
- Chen et al. Fantasia3D: Disentangling Geometry and Appearance for High-quality Text-to-3D Content Creation.

