X-Ray: A Sequential 3D Representation For Generation

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[1] National University of Singapore [2] HKUST(GZ)

NeurIPS 2024, **Spotlight**

X-RAY

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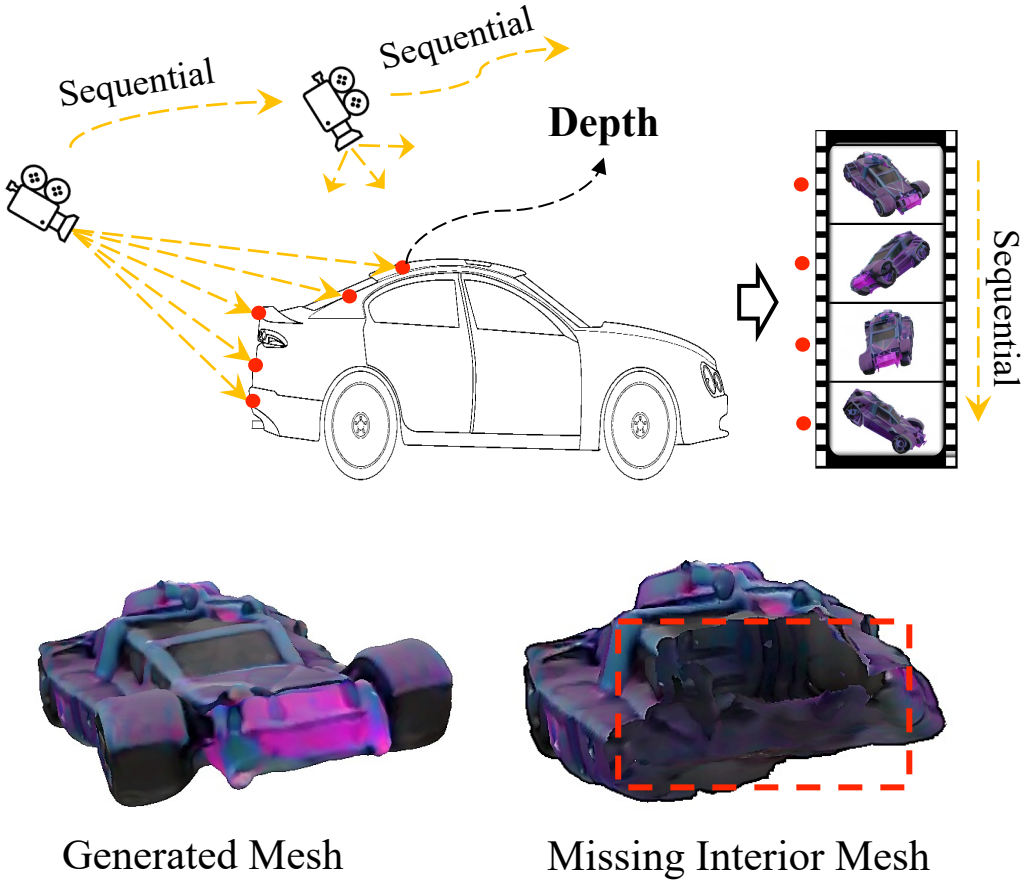

(a) Rendering-Based Generation

Outer Surface

X-RAY

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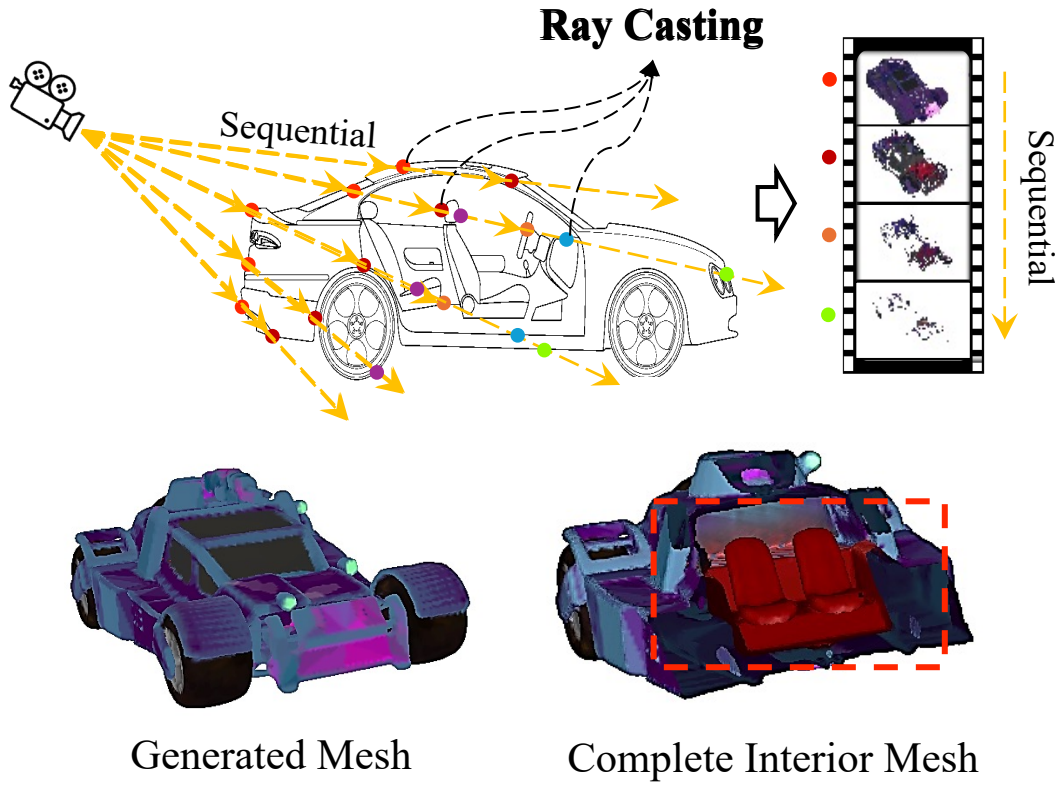

(b) X-Ray Generation (Ours)

Outer and Inner Surfaces

X-RAY

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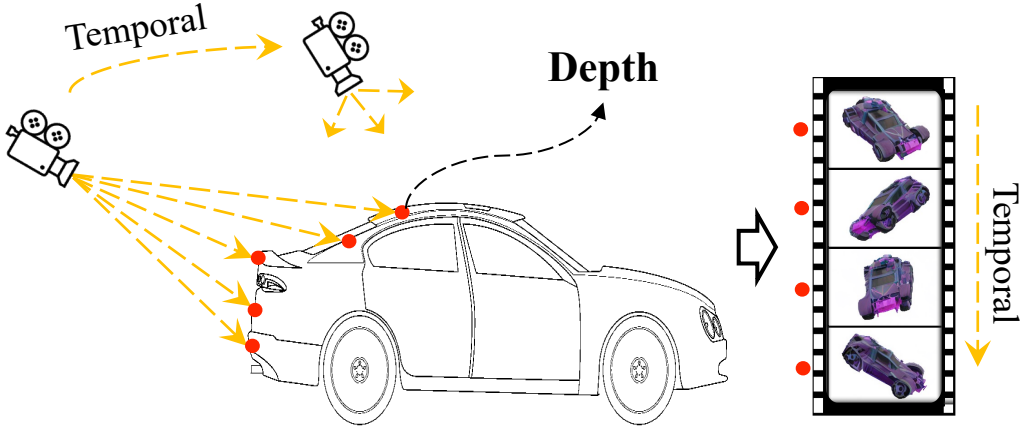
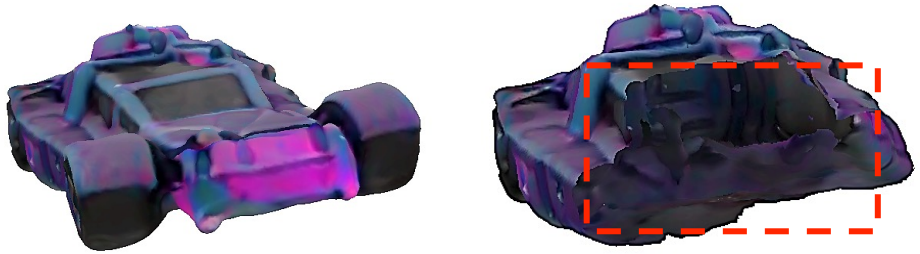
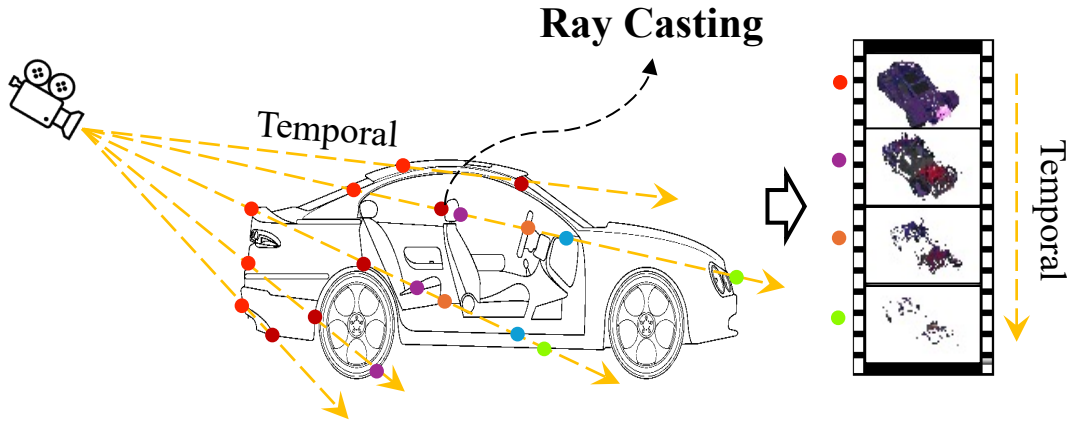
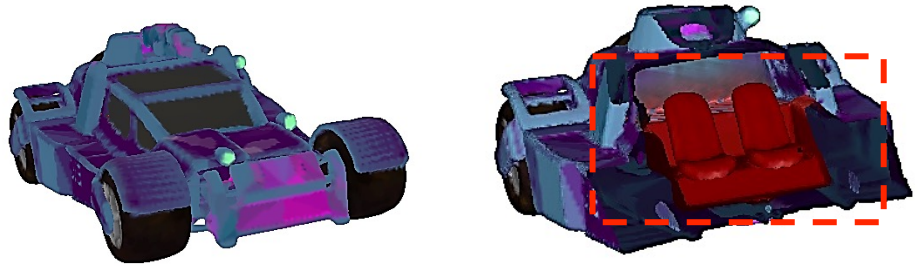




Generated Mesh Missing Interior Mesh

(a) Rendering-Based Generation: Outer Surface





Generated Mesh Complete Interior Mesh

(b) X-Ray Generation (Ours): Outer and Inner Surfaces

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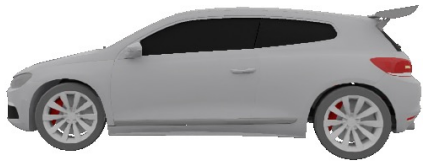

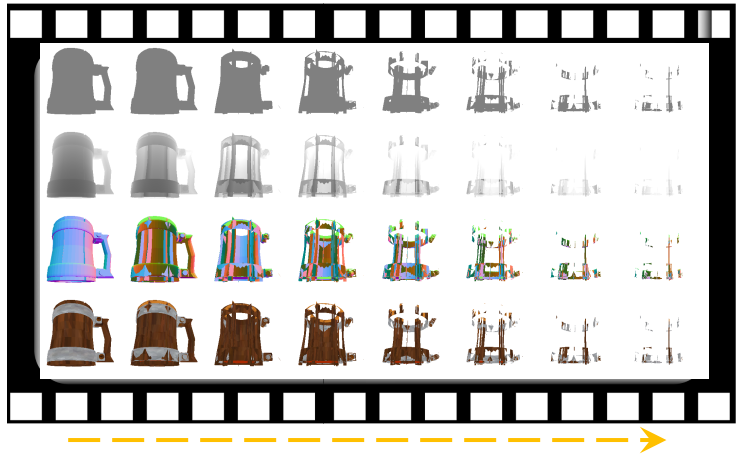

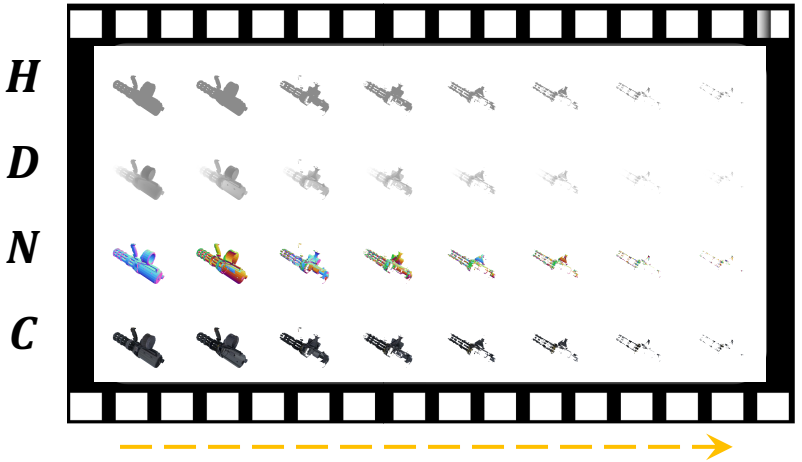

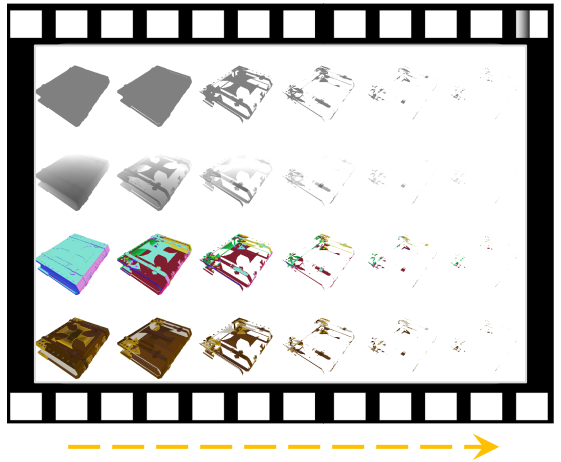

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Sample of X-Ray as Sequential Representation

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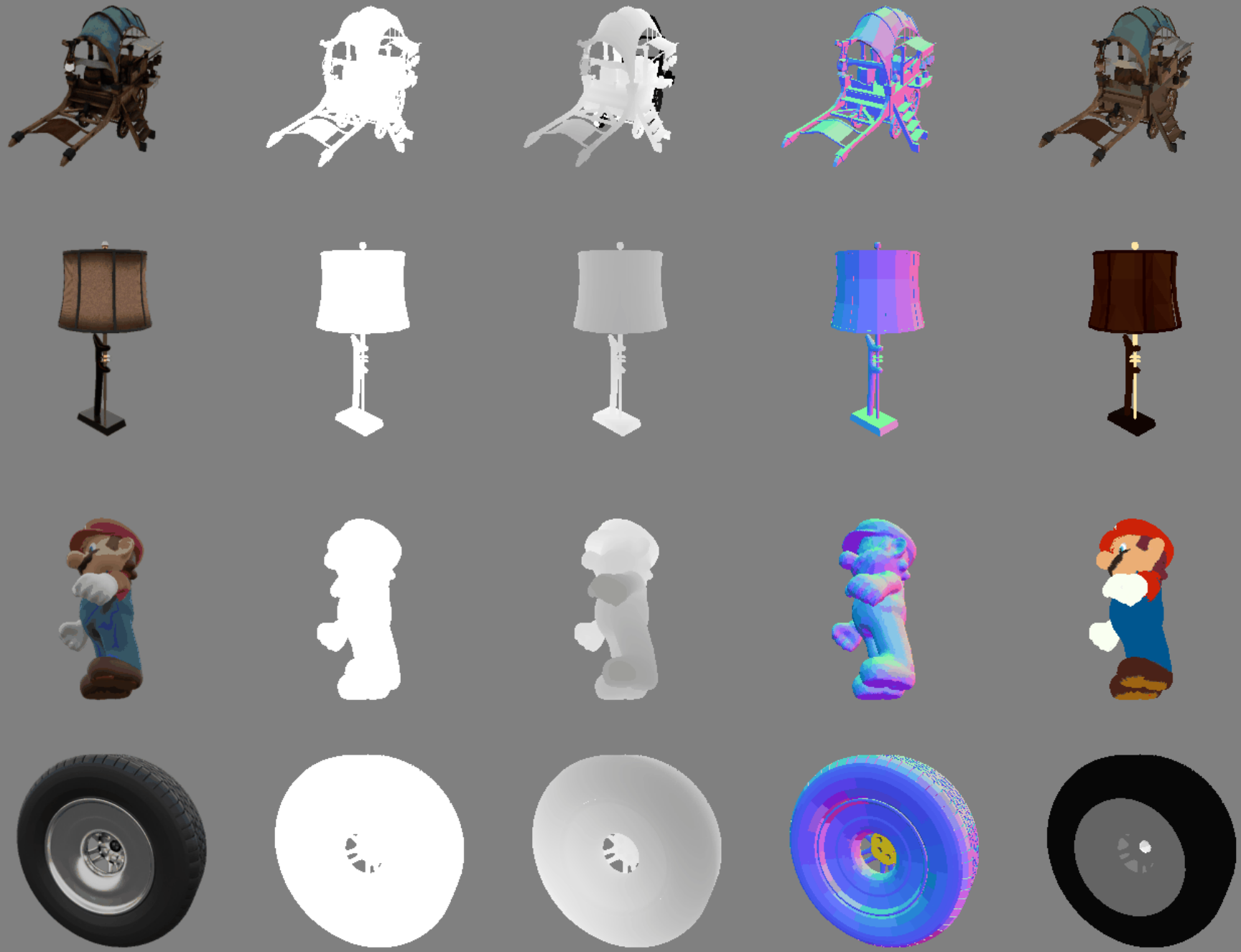

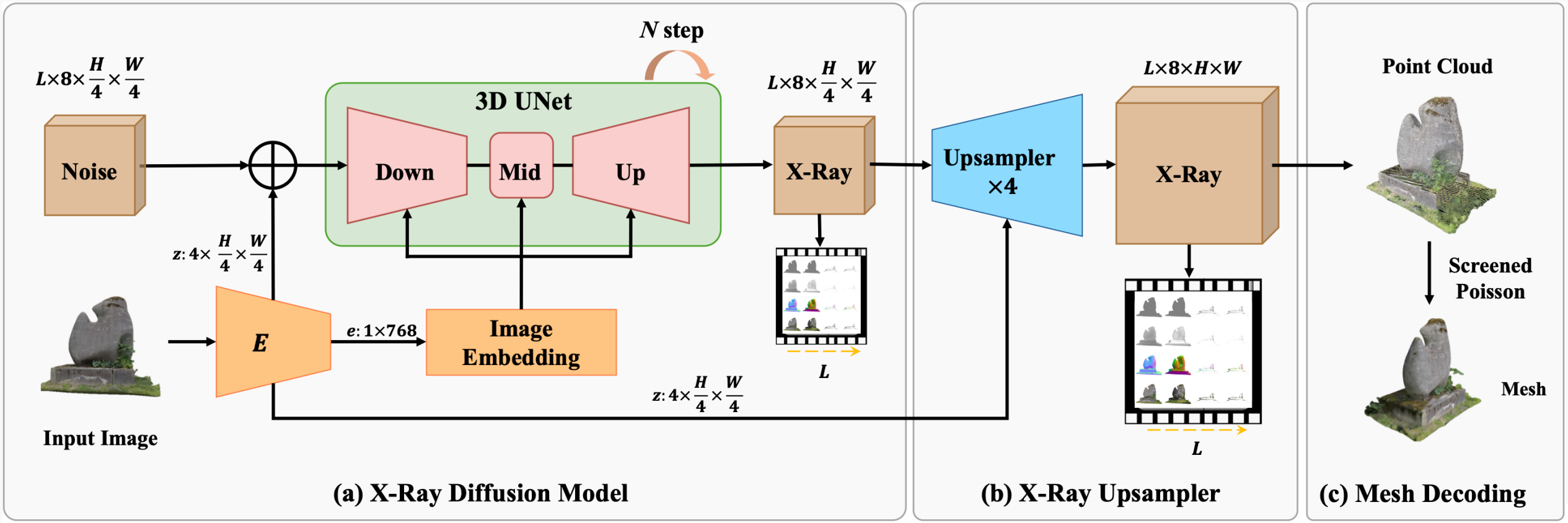

Fig. Overview of our proposed generative pipeline for the X-Ray 3D representation.

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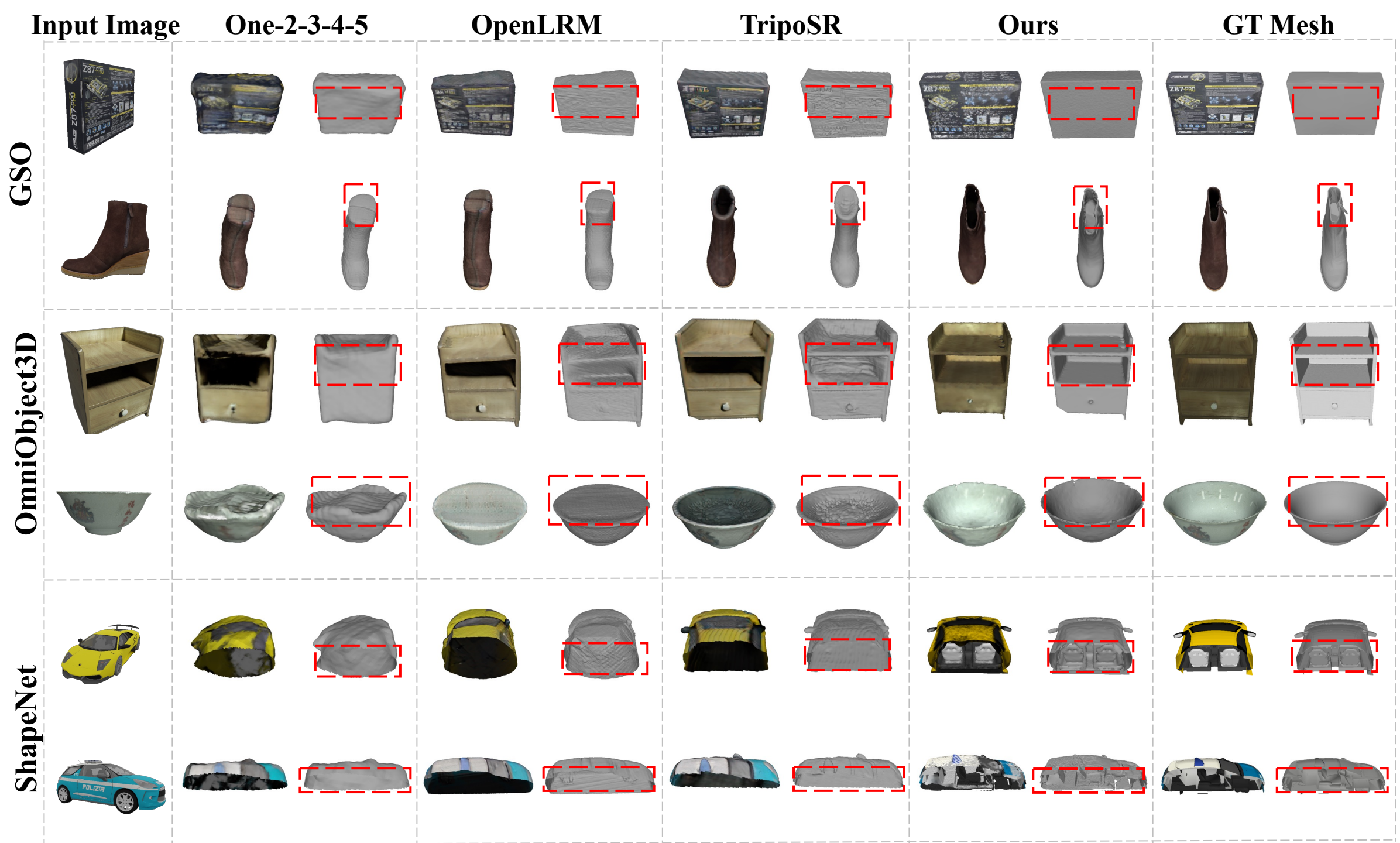
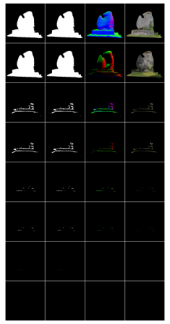
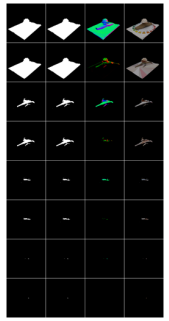
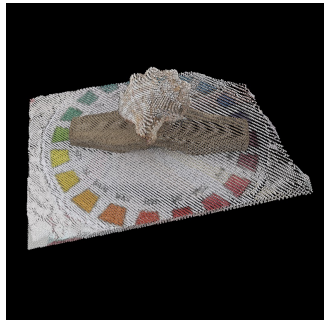
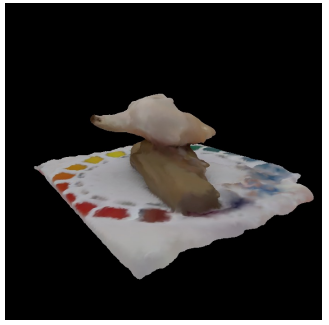
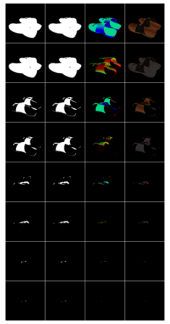
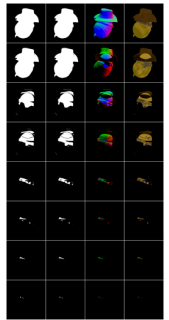

Input Image
One-2-3-4-5
OpenLRM
TripoSR
Ours
GT Mesh
GSO
OmniObject3D
ShapeNet

Input Image	*Synthesized X-Ray*	*Encoded Point Cloud*	*Decoded Mesh View 1*	*Decoded Mesh View 2*	*Decoded Mesh View 3*
					
					
					
					

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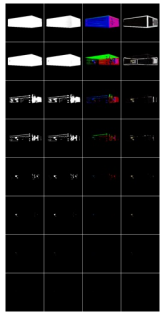
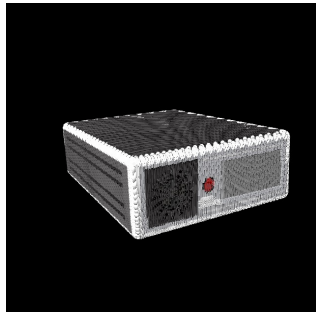
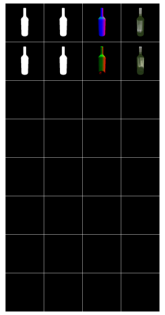
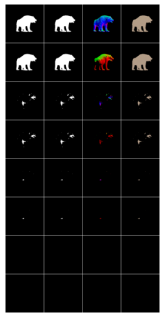
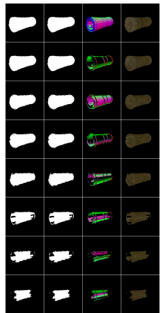
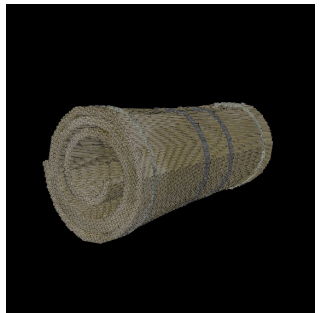
	Synthesized Image	*Segmented Image*	*Synthesized X-Ray*	*Encoded Point Cloud*	*Decoded Mesh*
"a black and silver power supply"					
"green wine bottle"					
"a polar bear"					
"a rolled haystack"					

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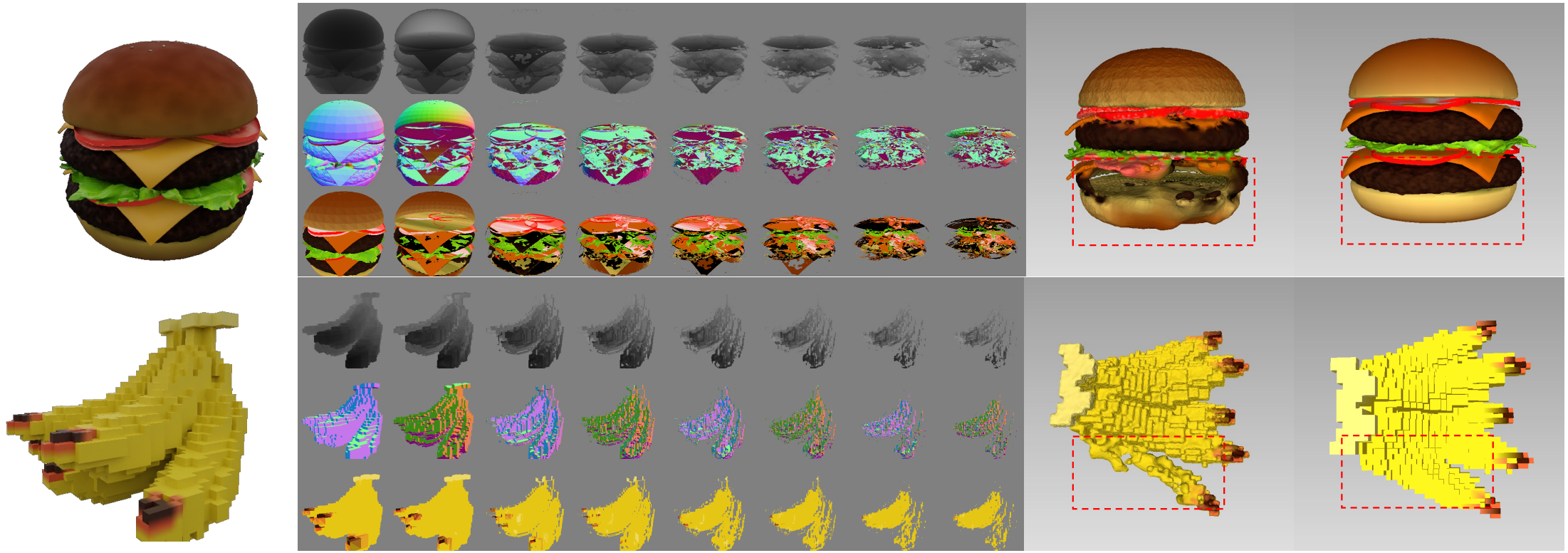
Failure Cases



Input Image | Generated X-Ray | Generated Mesh | Ground-Truth Mesh

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Thanks!
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