Make-A-Texture: Fast Shape-Aware Texture Generation in 3 Seconds

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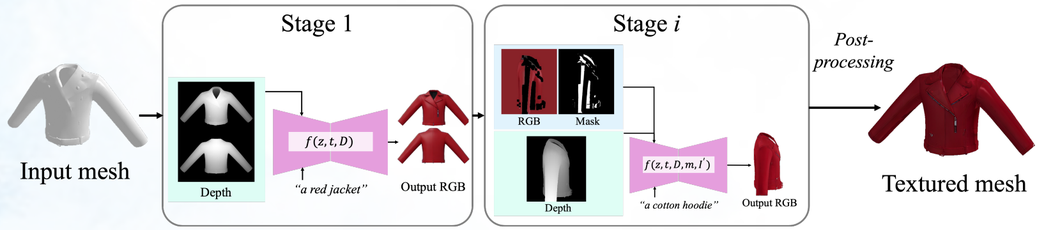
Meta

Method

The texture is generated iteratively from different viewpoints. At the 1st stage, we generate the front and back view together and backproject to the texture UV. In following stages, the output is conditioned on both geometry and the existing textures via inpainting.



Multiview Consistency

By generating front and back views simultaneously, our method ensures better global consistency. Unlike others using masked generation tweaks, we dynamically balance depth and inpainting controls at each stage for better local content consistency.

Generality

Our method generates textures for various mesh categories and handles different mesh types, including non-watertight ones, making it highly adaptable for diverse 3D modeling applications.

Speed

We propose a fast backprojection method with coordinate mapping and bilinear splatting, which has the lowest latency compared to all known methods. Our texture generation (4.56 seconds on NVIDIA A100; 3.07 seconds on H100) is significantly faster than previous methods like SyncMVD (81 seconds on A100) and Meta 3D TextureGen (19 seconds on H100).

	Automatic		User Study Win Rate		A100
Method	FID↓	KID↓	Quality	Alignment	Runtime (s) ↓
TEXTure	123.63	27.07	71%	57%	90
Text2Tex	120.37	25.11	72%	64%	287
SyncMVD	**110.99**	**20.49**	51%	49%	81
Paint3D	117.39	23.67	69%	66%	66
InTex	117.07	21.25	76%	69%	20
Ours	113.99	20.95	-	-	**4.56**