

Scaling UP

3D Digital Human Generation

Hao Zhu

Nanjing University

2025/04/11

➤ 3D Digital Human Generation



Portrait Image

“A middle-aged man in a green long-sleeved shirt and blue jeans”

Descriptive Text



3D Textured Model

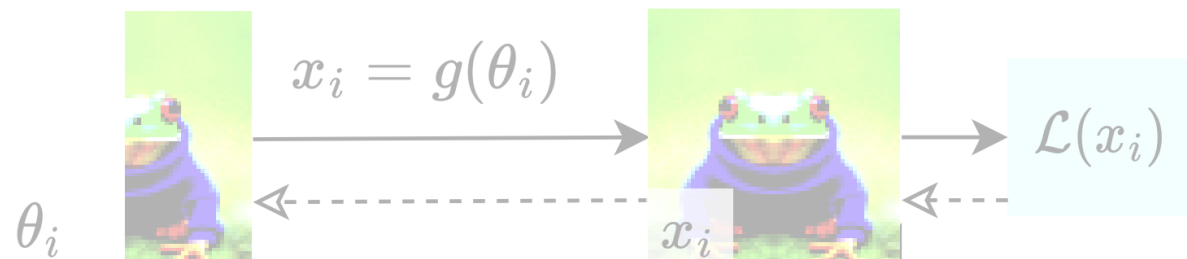
➤ 3D Human Data Scarcity

Scaling Law + **3D Human Generation** = ?

The number of 3D human models is limited.



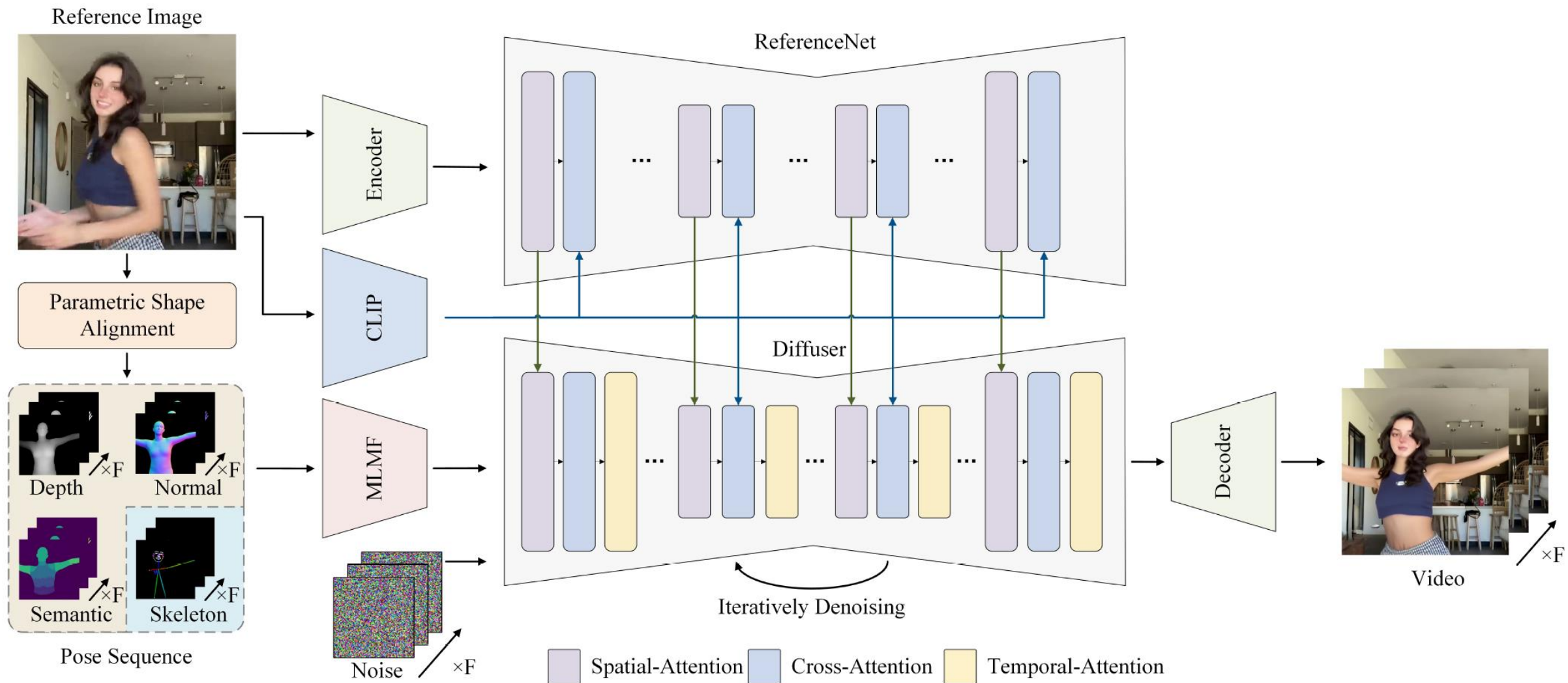
Score Distillation Sampling is slow and unstable.



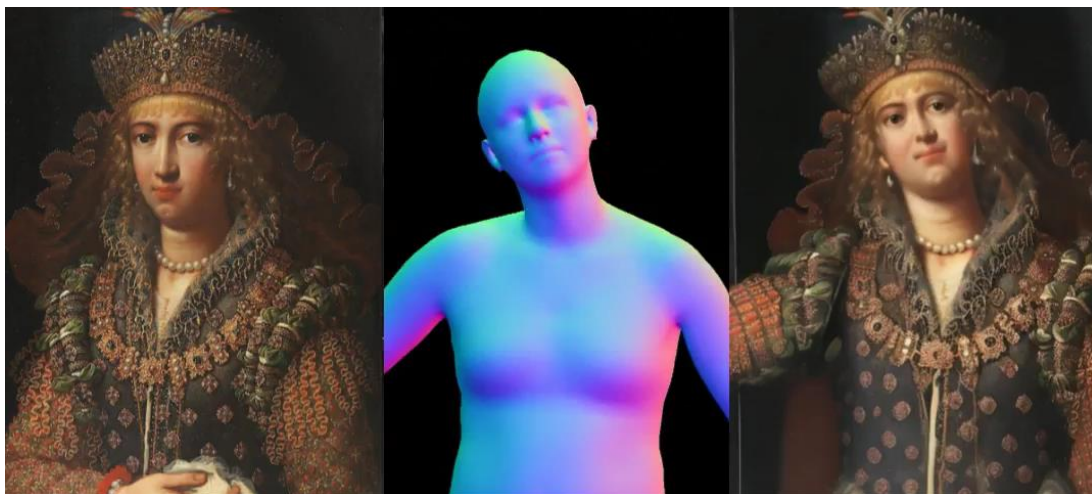
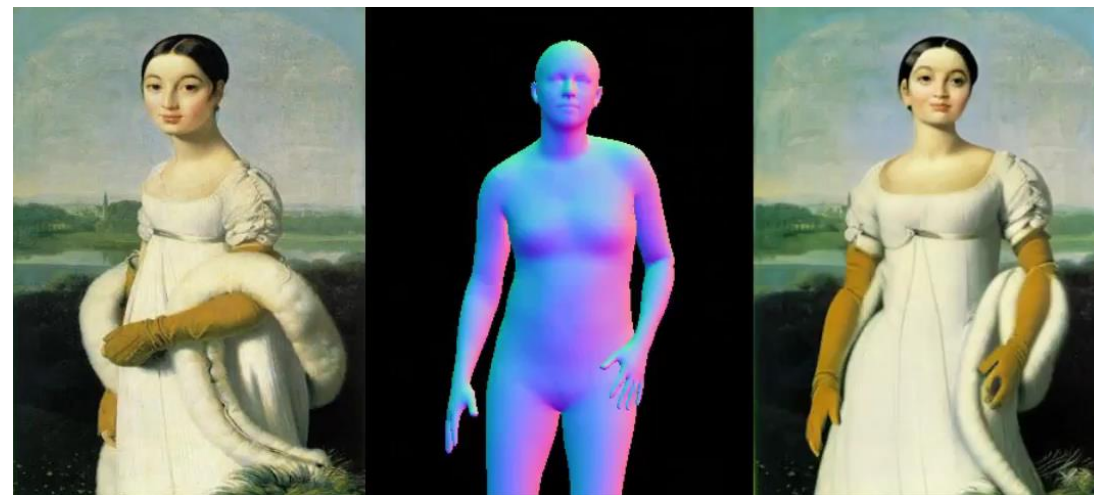
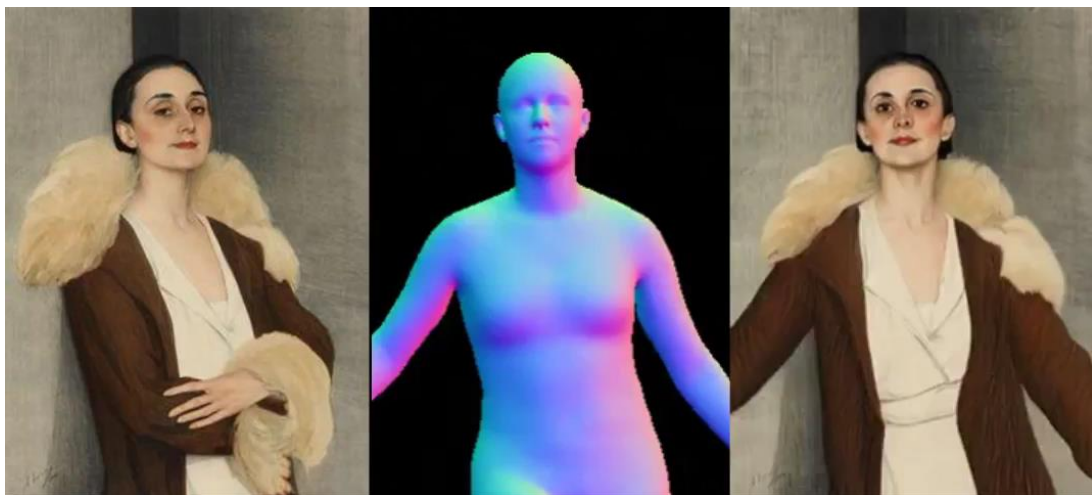
100k Synthesized Data



➤ Champ - 3D-Driven Human Image Animation Model



➤ Champ - 3D-Driven Human Image Animation Model



Reference
Image

Driving
Motion

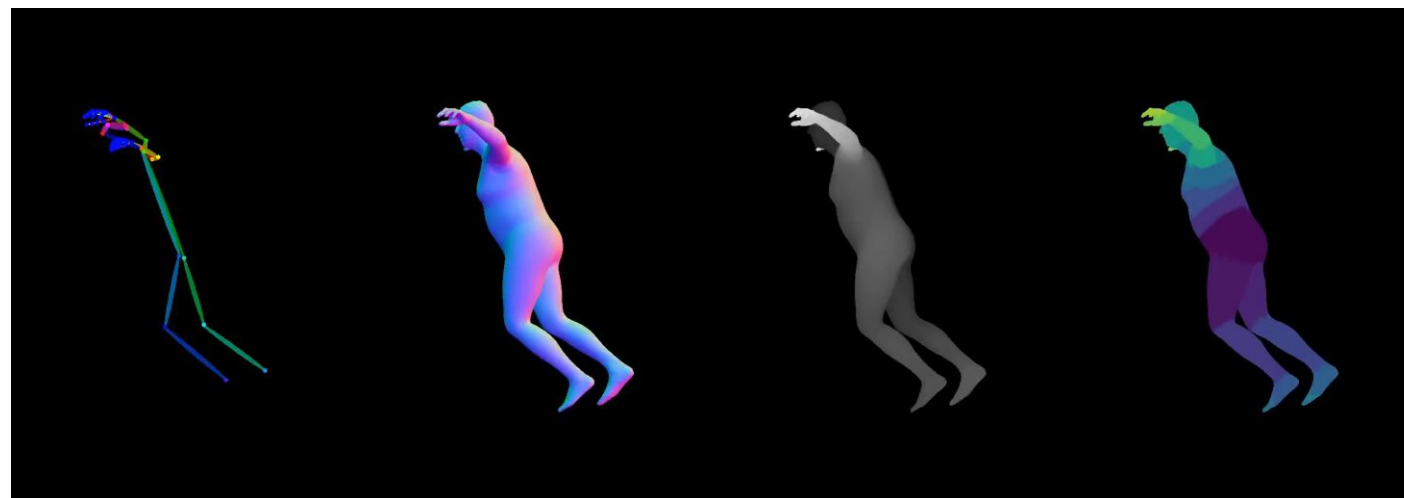
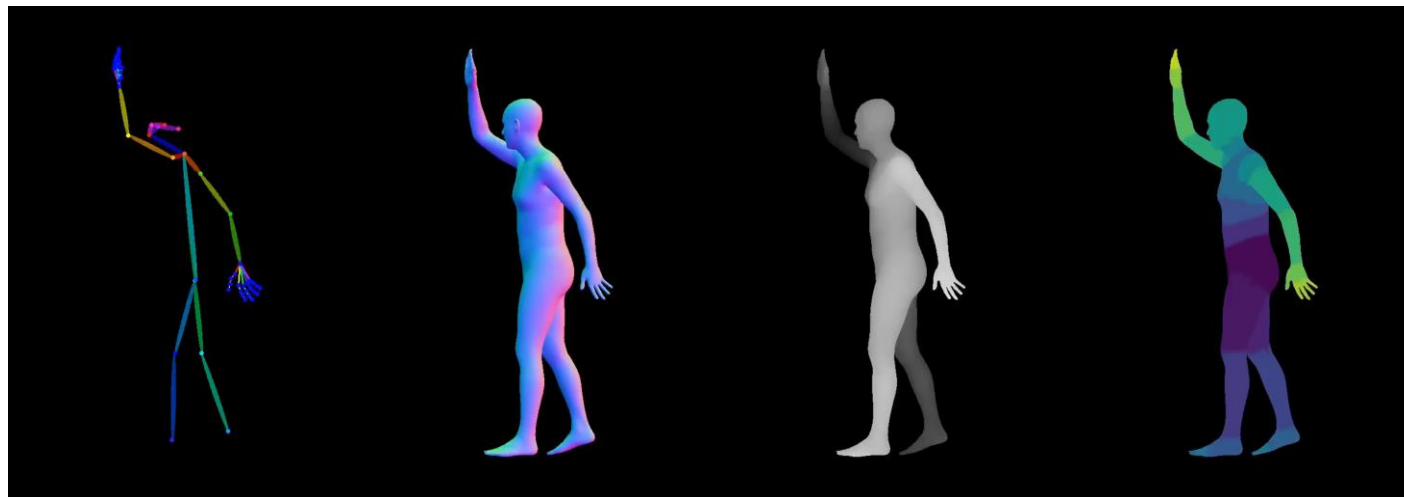
Animation
Results

Reference
Image

Driving
Motion

Animation
Results

➤ Multi-View Champ – Extend for Better Multi-View Consistency



Reference Image

Multi-View Poses

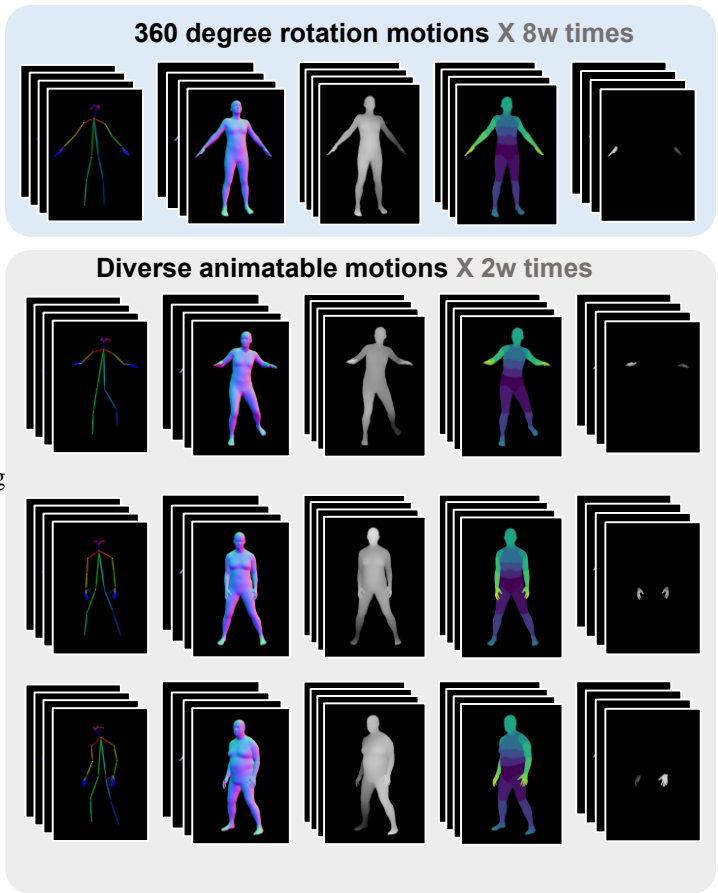
Results

➤ Multi-View Champ – Customize Champ For Better Multi-View Consistency

- a. Attribute Collections**
- Age: {"20~30", ..., "70~80"}
 - Body Shape: {"Lean", ..., "Stocky"}
 - Country: {"Canada", ..., "Japan"}
 - Sex: {"female", "male"}
 - Clothing: {"Dresses", ..., "Kimono"}

Uniform select ↓

Front view, full-body pose of a {Age} {Body Shape} {Country} {Sex} wearing {Clothing} and visible hands. She/He stands against a white background, evenly lit.



(i) Text Sources

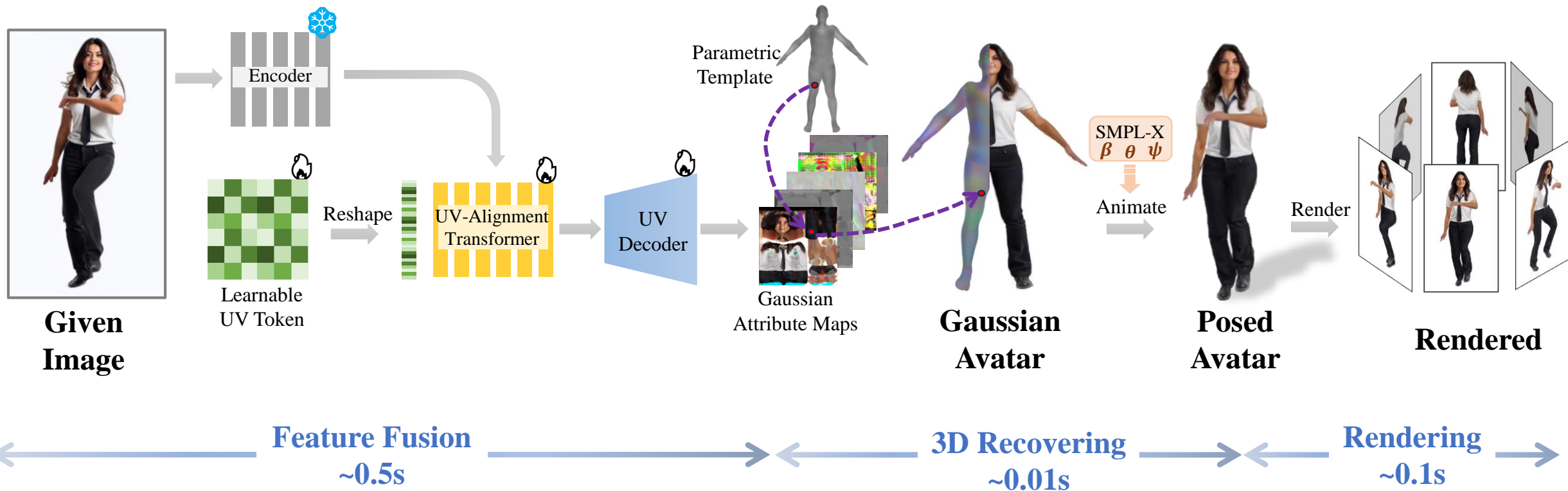
(ii) Image sources: Real & Generated images

(iii) Condition: Multi-View Pose Sequences

(vi) Output: Multi-view Images



➤ IDOL – Instant Photorealistic 3D Human Creation from a Single Image



➤ IDOL – Results



➤ IDOL – Results



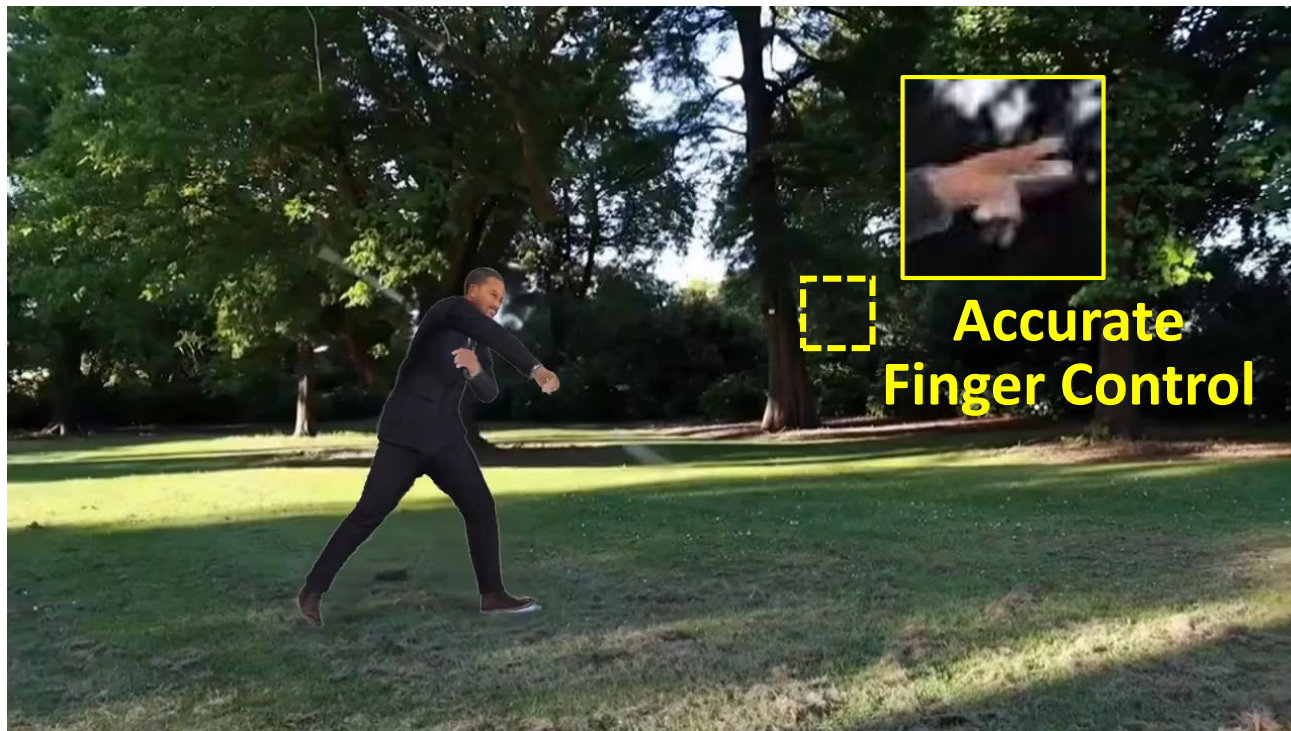
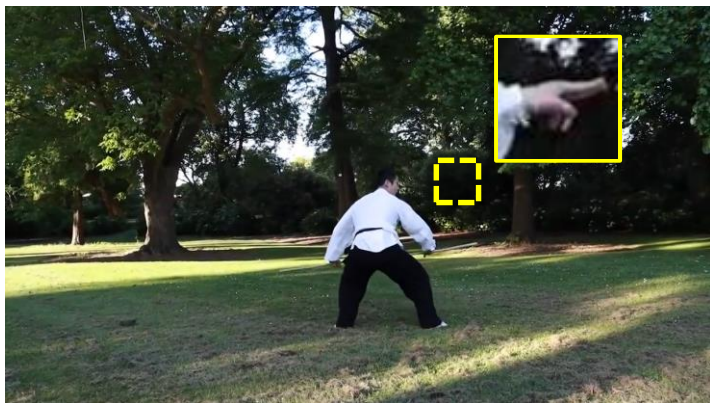
➤ IDOL – Animatable Model

Reference
Image



+

Driven
Video



Results

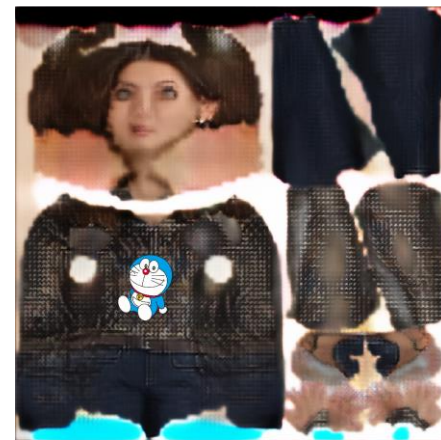
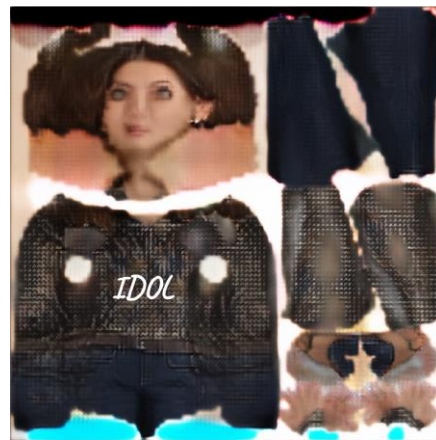
➤ IDOL – Texture Editing



IDOL



**Texture
Edit**



➤ IDOL – Shape Editing



Thin

Fat

Shape Edit

➤ **IDOL – Generalizability**



➤ TeRA – Text-guided Realistic 3D Avatar Generation

"A woman with an oval face, dark brown skin, and black hair in a high bun wears a white sleeveless cropped tank top, blue jeans with rolled cuffs, and white sneakers."

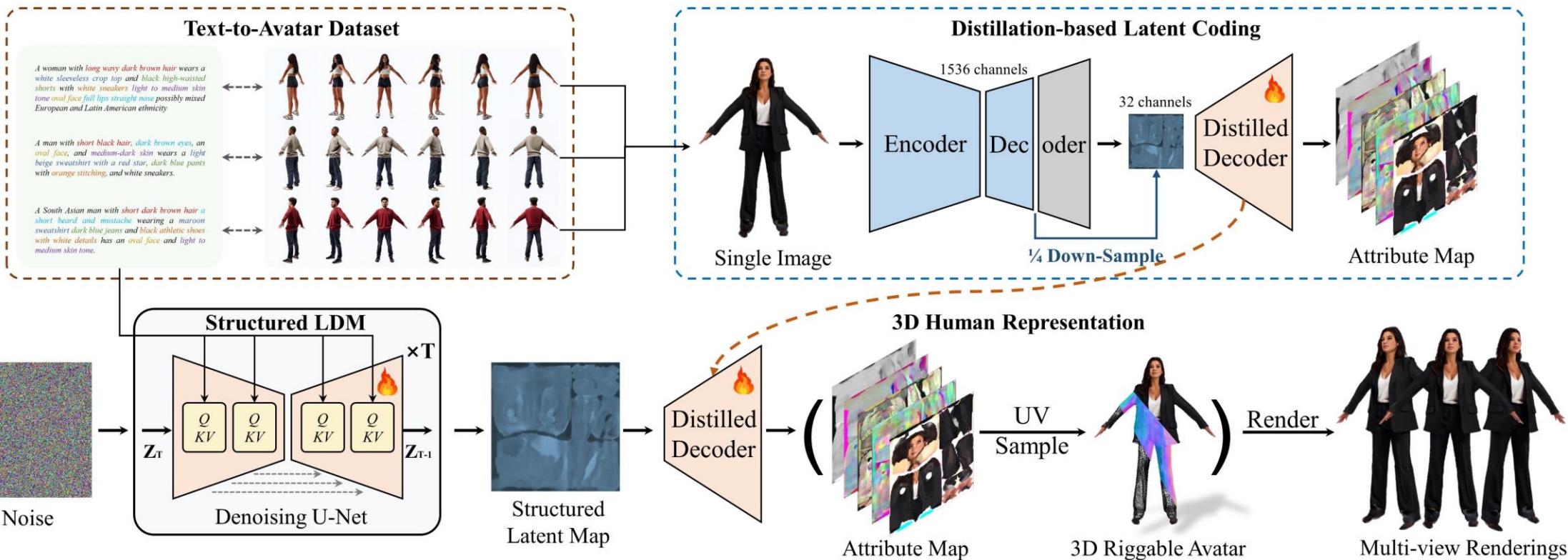


TeRA
🚀 10s



Inference

Directly
Animate



请批评指正!

Scaling UP 3D Digital Human Generation系列工作:



- IDOL: Instant Photorealistic 3D Human Creation from a Single Image, *CVPR 2025*
- Champ: Controllable and Consistent Human Image Animation with 3D Parametric Guidance, *ECCV 2024*
- TeRA : Rethinking Text-driven Realistic 3D Avatar Generation, *Preprint 2025*