



S-LAB
FOR ADVANCED
INTELLIGENCE

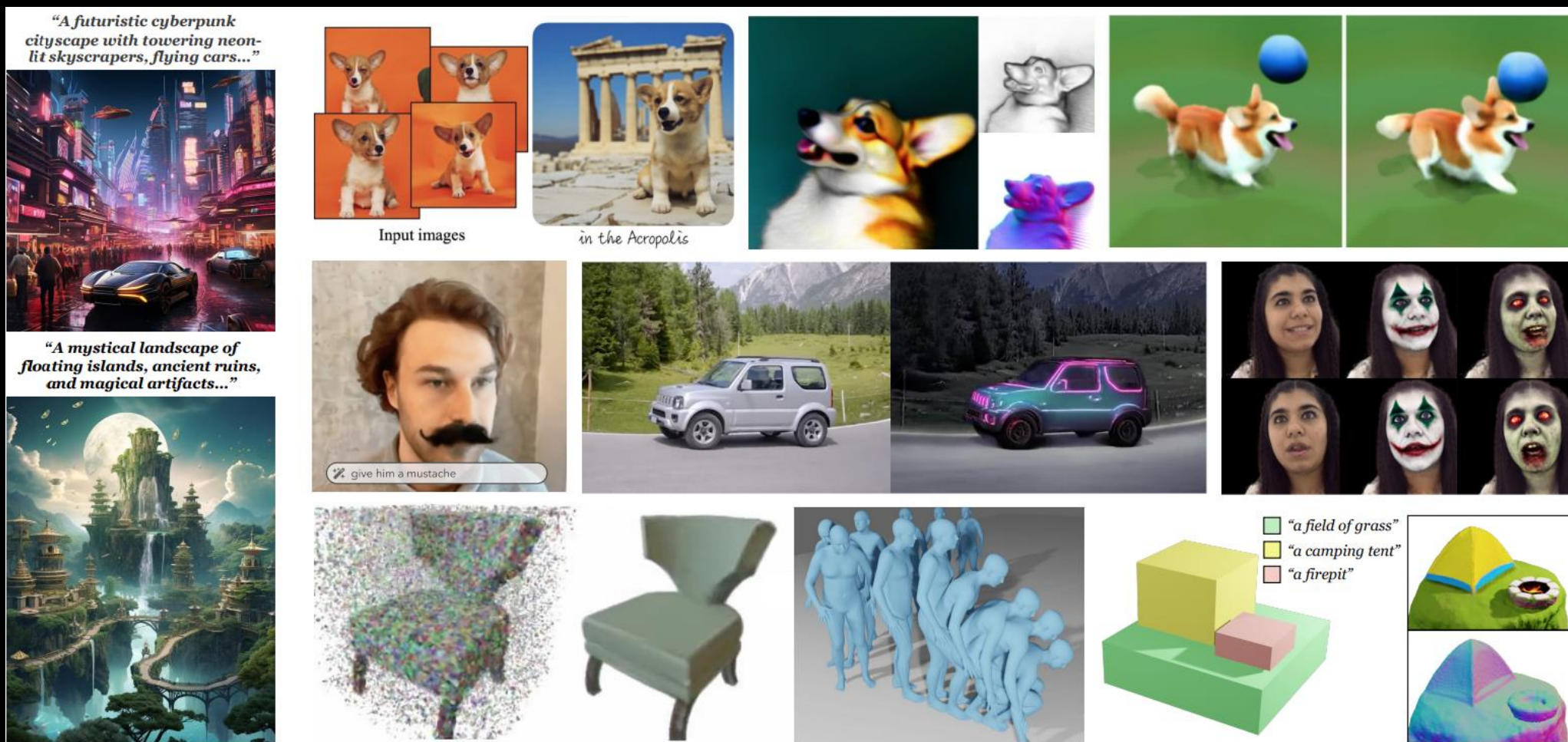


PrimDiffusion: Volumetric Primitives Diffusion for 3D Human Generation

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¹S-Lab, Nanyang Technological University ²Sensetime Research

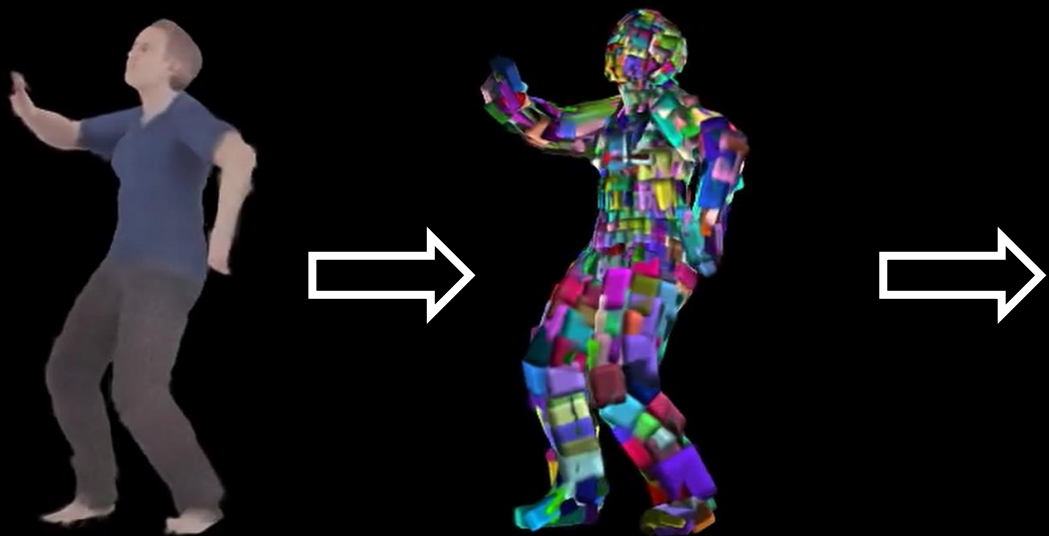
Diffusion models are awesome!!!



Can we tame diffusion models for 3D human generation?

- The answer is **YES!!!** But ...
 - How to design the parameter space?
 - How to inherit articulated human prior?
 - How to avoid slow denoising steps upon input condition changes?

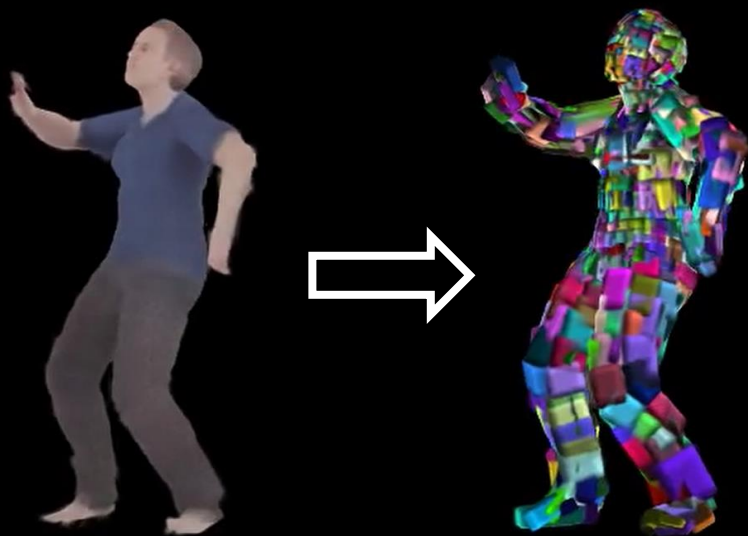
PrimDiffusion



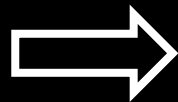
Volumetric Primitives as
3D Human Representation

PrimDiffusion: Generate 3D Human via
Denoising Primitives using Diffusion Model

PrimDiffusion

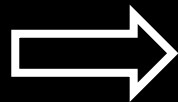
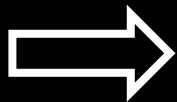
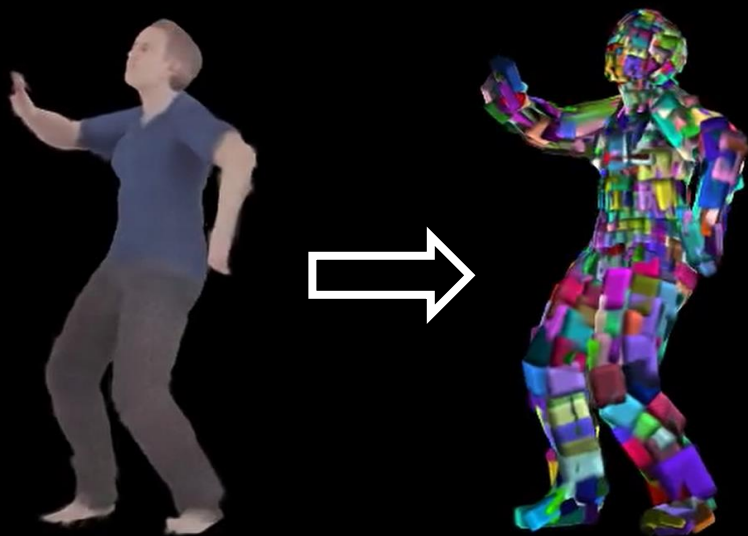


Volumetric Primitives as
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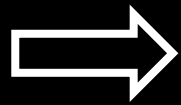
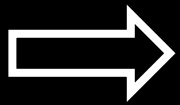
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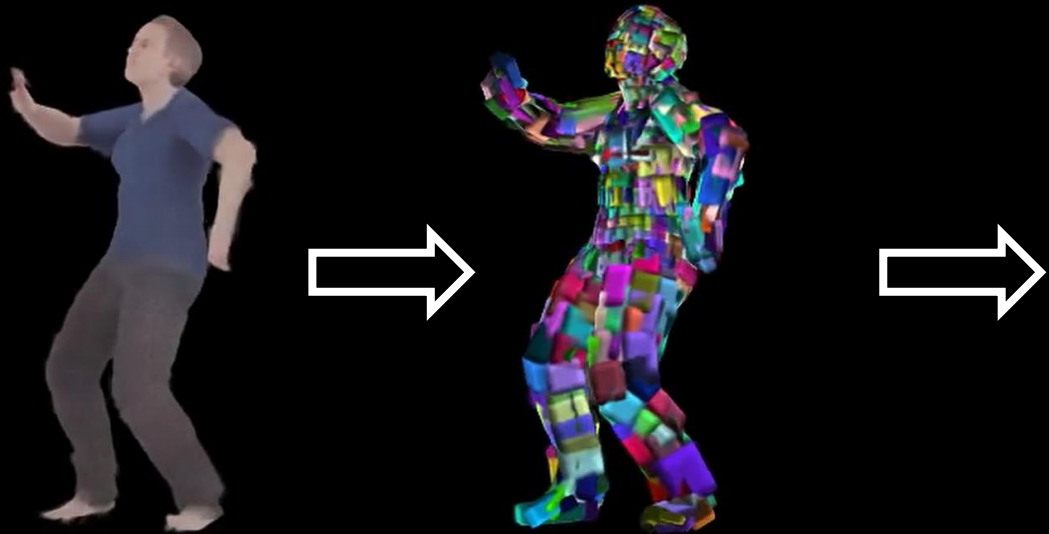
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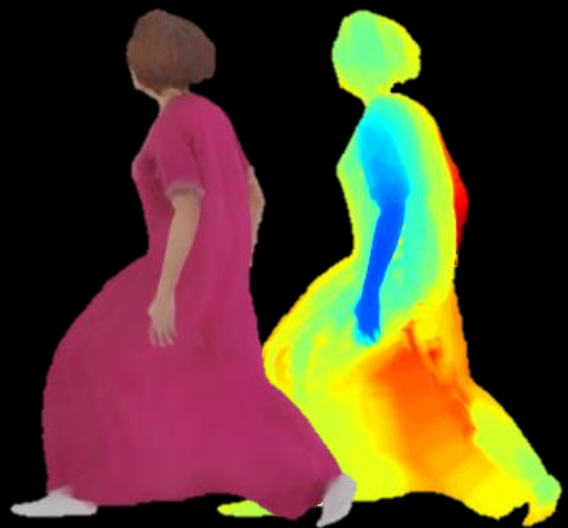
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Novel Views



Well-defined Depth



Pose Generalization



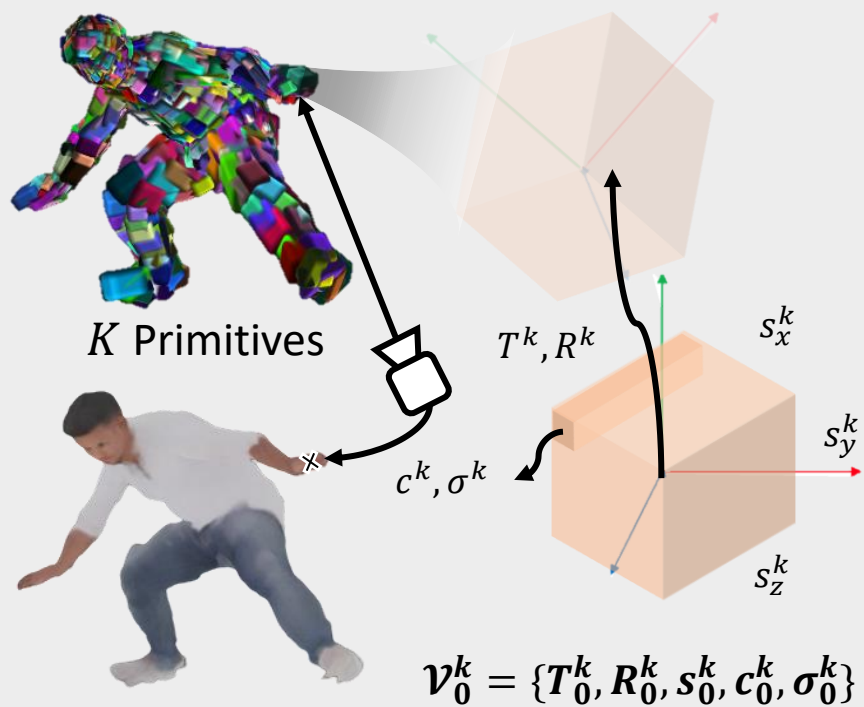
Texture Transfer

PrimDiffusion: Overview

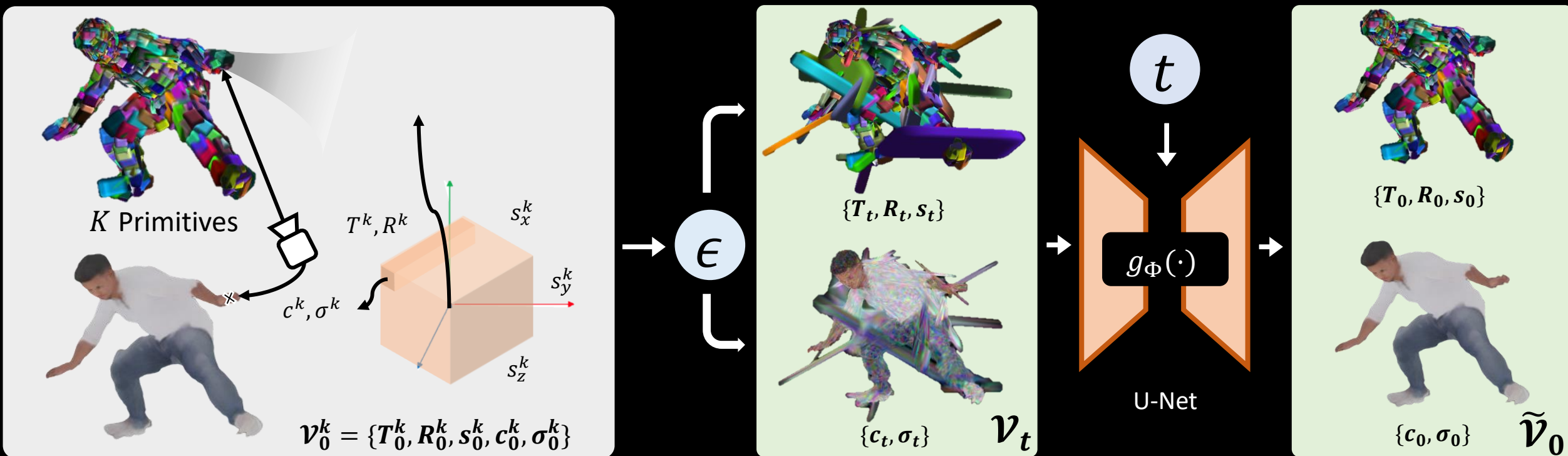
PrimDiffusion: Overview



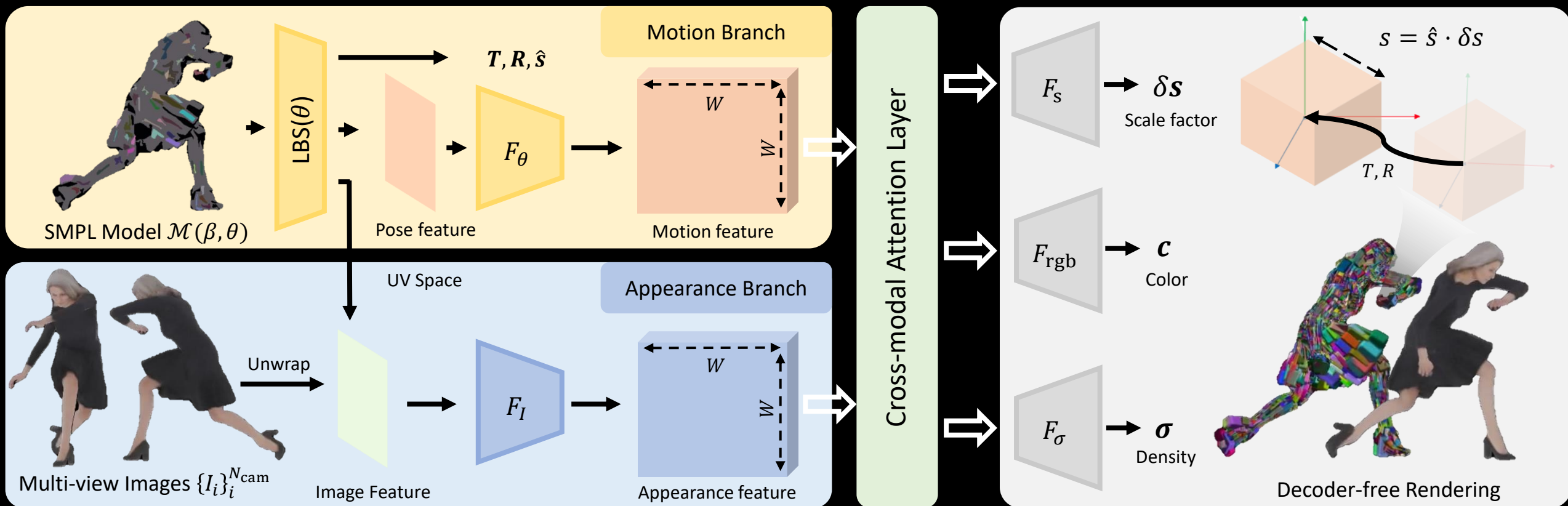
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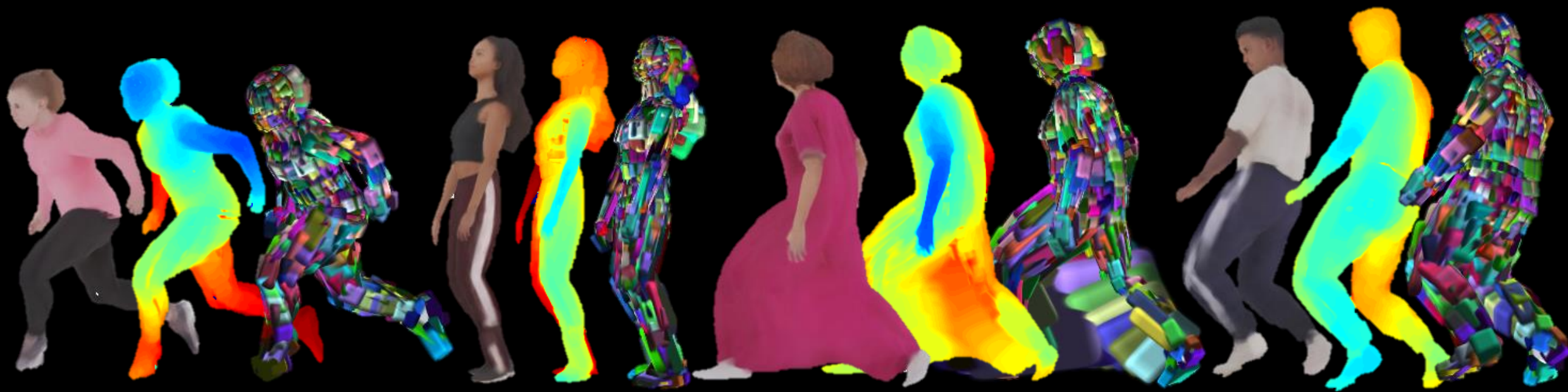
PrimDiffusion: Primitive Fitting from Multi-view Images



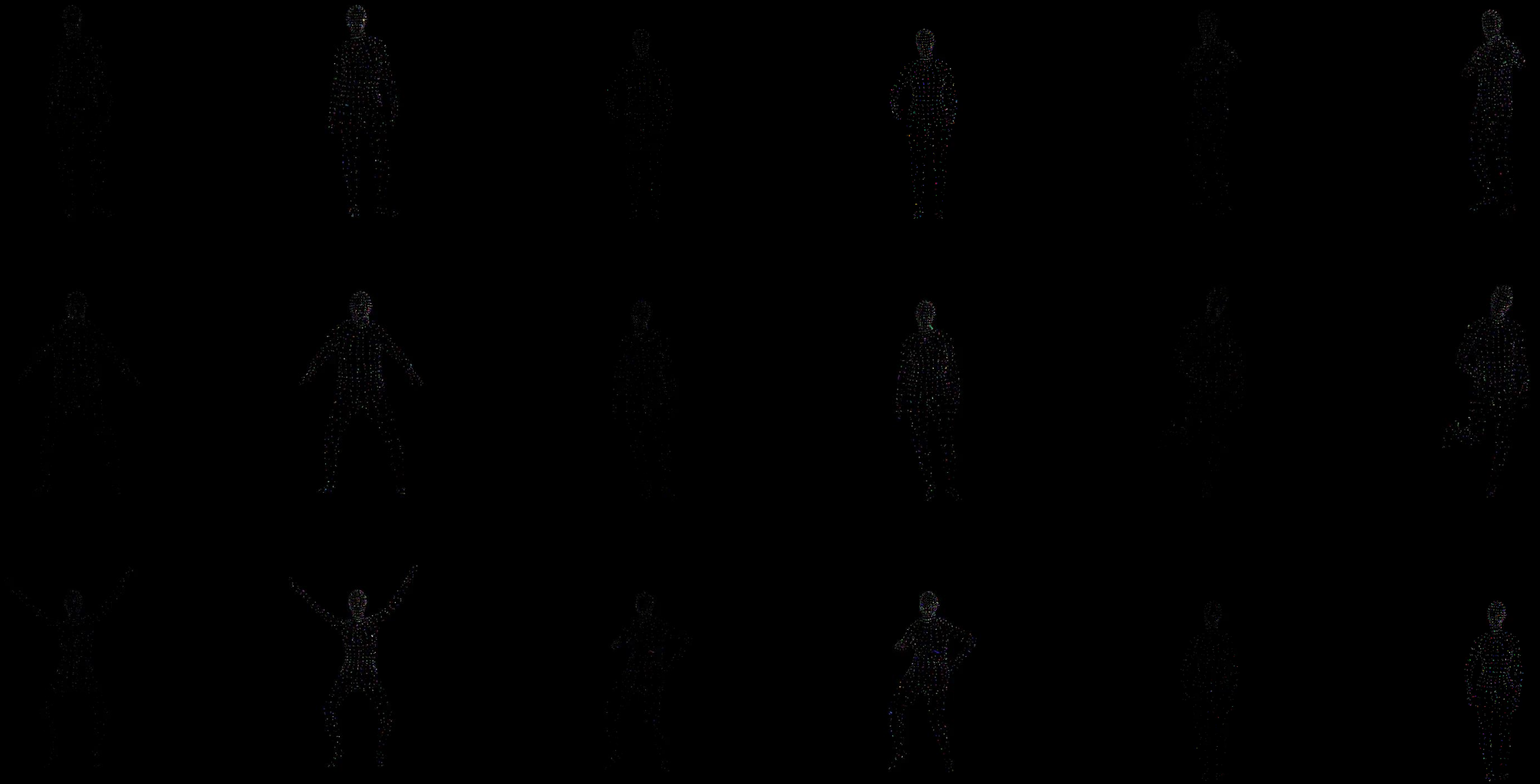
Application

Real-time Rendering of Generated 3D Humans

Explicit controls of view, pose, shape with well-defined depth and off-body topologies



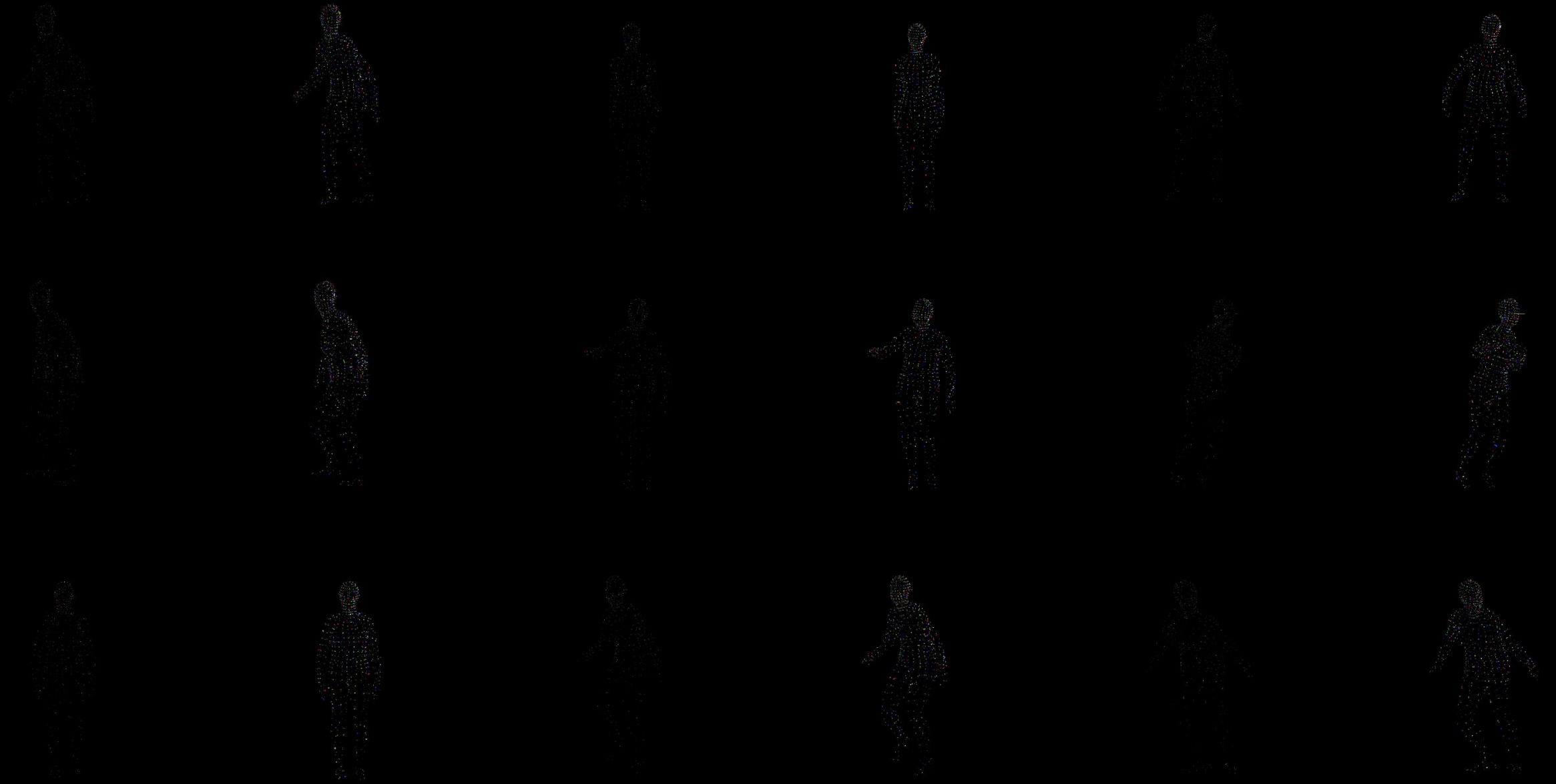
Unconditional 3D Human Generation: 360° Novel Views



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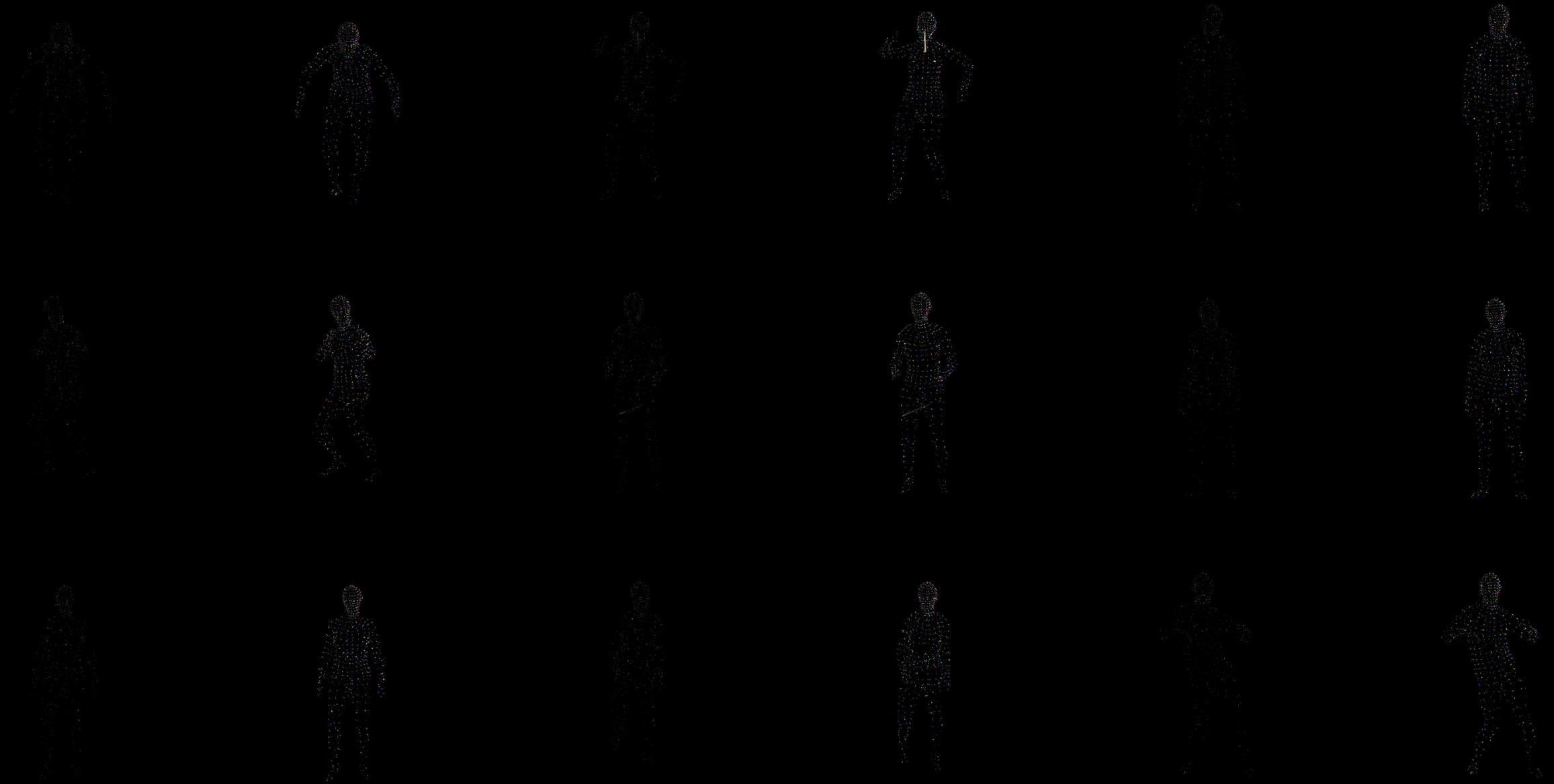
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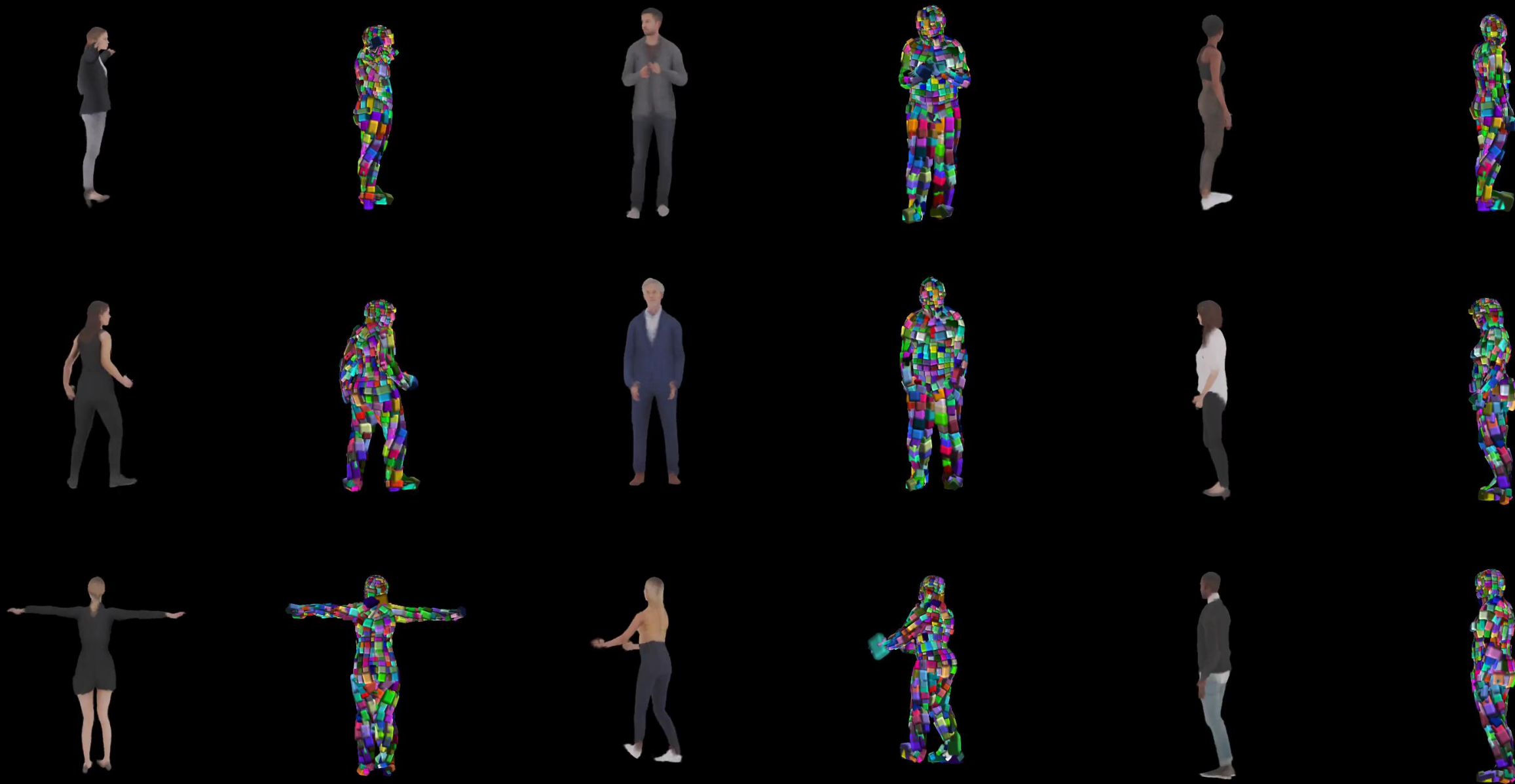
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Novel Pose Generalization



Novel Pose Generalization





Thanks!