

# GarmentDreamer: 3DGS Guided Garment Synthesis with Diverse Geometry and Texture Details

## Supplementary Material

### 6. Additional Experiments

#### 6.1. Garment Simulation

We use the SMPL-X model [42] as the articulated human base to simulate garment dynamics. Initially, we manually adjust the garment on the human template by scaling, translating, and altering the human pose. This rough fitting often results in numerous penetrations. To address this, we employ Position-Based Dynamics (PBD) [41] to push the garment mesh outside the human body. During this process, the garments are equipped with high stretching and bending stiffness to preserve the initial shape. Subsequently, we apply Codimensional Incremental Potential Contact (CIPC) [28] to simulate the garments on a human motion sequence, using manually selected physical parameters. The human mesh is treated as a moving boundary condition. We use CIPC because it can ensure penetration-free results, which is essential for accurate garment simulations. Note that the state generated by PBD is merely an initial feasible state for CIPC. The rest pose of the garment remains as originally generated, though adjustments in the scale of the pose can be made to modify the tightness of the fit.

#### 6.2. Showcases

We visualize a range of 3D textured garment meshes generated by GarmentDreamer, encompassing diverse categories such as dresses, trousers, shirts, skirts, tees, and jumpsuits. GarmentDreamer not only produces intricate geometric details that align with pattern descriptions but also generates a variety of high-quality textures based on material descriptions. As shown in Fig. 8, GarmentDreamer successfully creates skirts and tees with consistent denim textures. Additionally, the generated non-watertight wearable garments are ready for direct application in simulations and animations. We showcase four dancing sequences in Fig. 1. Human motion are generated by Mixamo<sup>2</sup>. The animation sequences are in Fig. 9.

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<sup>2</sup><https://www.mixamo.com/>

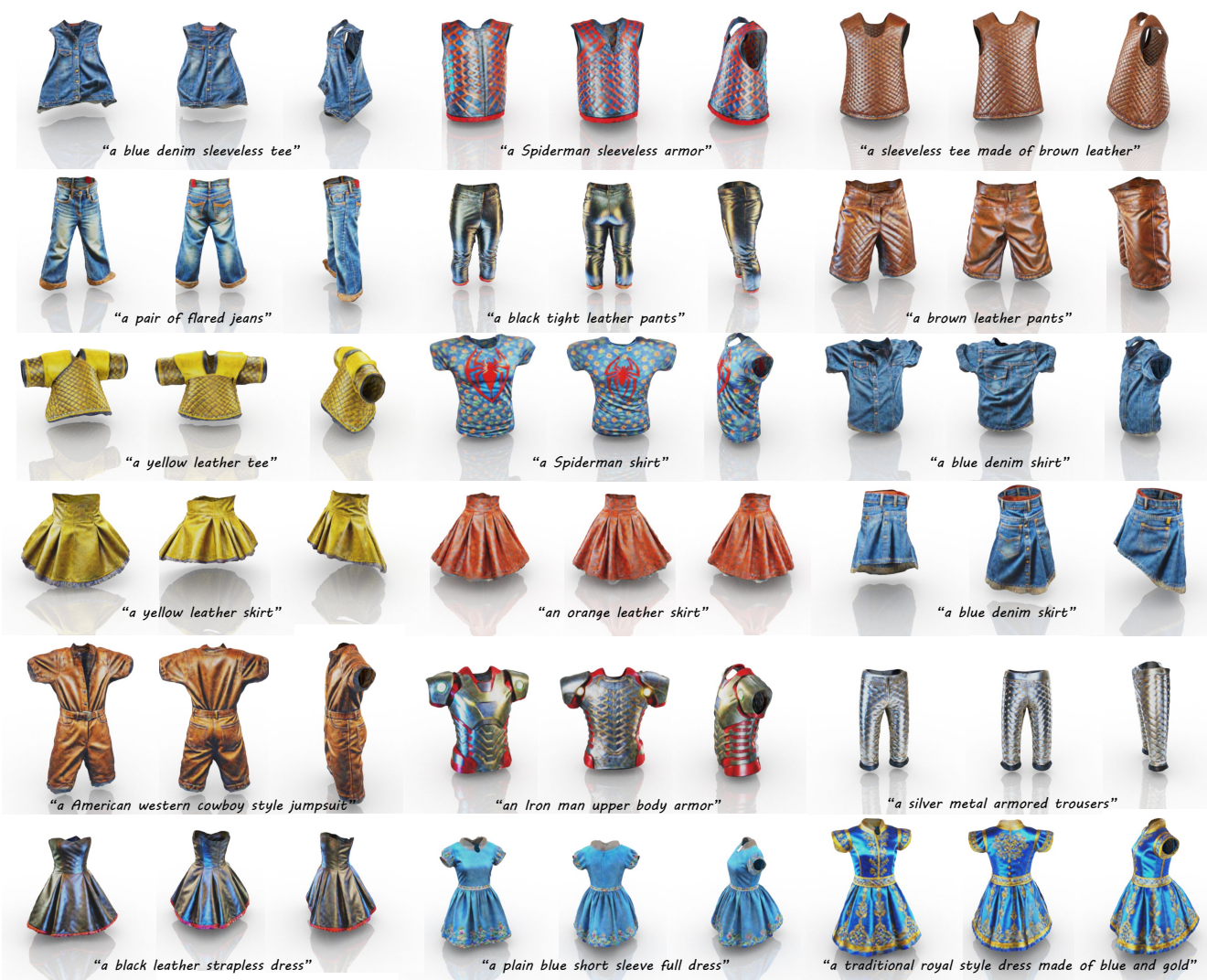


Figure 8. **Garment Gallery.** We showcase a gallery of textured garment meshes of different clothing categories generated by Garment-Dreamer. We refer to the supplementary material for closer observations of these garments and more generation results.



Figure 9. We use the SMPL-X mesh sequence to drive the dynamics of our generated garments. The utilization of CIPC resolves frictional collisions and self-collisions effectively and guarantees non-penetrative results in garment simulations.