

DressCode: Autoregressively Sewing and Generating Garments from Text Guidance

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Early Work and Requirements

What has been done till now?

1. Representing garments through Meshes or Neural Fields
 - a. Topology Limitations
 - b. Draping Limitations
2. Point cloud representation
 - a. Suitable to represent geometry but cannot represent textures.

Requirements

1. CG-friendly garment generation using Sewing Patterns.
2. Vivid generation through desired textures and Physically Based Materials.
3. Handling generation through more natural language interactions.

DressCode : The New Paradigm

DressCode is a novel framework that empowers users to create customized 3D garments simply by describing them with text.

Input: Natural language text prompts describing the garment's shape, style, and desired texture.

Two Key Components:

SewingGPT: A GPT-based architecture specifically trained to generate sewing patterns from text. SewingGPT outputs the garment's blueprint, detailing how different fabric panels are connected and arranged.

Fine-tuned Stable Diffusion: A tailored version of the powerful Stable Diffusion model, trained on a dataset of PBR textures. Given text descriptions, this component generates realistic fabric textures to apply to the generated garment.

Output: High-quality, CG-ready 3D garments that can be seamlessly integrated into existing digital fashion pipelines for animation, rendering, and further editing.

Customized Garment Generation

"Attend a dance party."



For the dancing party, you can wear the following clothing combination:

"Clothing Combination":

```
[  
  "dress, short sleeves, hip-length",  
  "blue base, with flowers"  
]
```

Enjoy your party!

Shape Prompt

"dress, short sleeves, hip-length"

SewingGPT

Simulation

Animation



Texture Prompt

"blue base, with flowers"

SD

Feature map

Threefold
Decoder

PBR textures

Texture Generation

Rendering



Achievements and Limitations

Achievements

- ❖ Highest CLIP Score of 0.327 in its category.
- ❖ PBR Texture, Texture Editing, Draping available.
- ❖ Least runtime of ~4s compared to competing models.

Limitations

- ❖ Expand the dataset with more diverse and wider garments.
- ❖ Increase modality.
- ❖ Potential ethical concerns.