Dataset of Rendered Cloth-Draped Object-Meshes for Model-Training

Overview

This data set is comprised of 5000 images featuring 100 cloth-draped object-meshes from different angles with shading, as well as another 5000 images of 100 cloth-draped object-meshes with annotated distances in greyscale format. These images are designed to be used for training a model which can recognize the interaction between the cloth and the underlying object, or the hidden object itself. Additionally, there are 40 images included that are rendered under the same conditions to be used as test data.

Features

1. **High Level of Randomization**: Our dataset is designed to be as random as possible. This includes that the horizontal and vertical angles are dynamically calculated to get a high mix of angles, as well as dynamic distance calculation and a highly mixed data set so that similar angles don't come directly after each other.
2. **Manual checking for usability**: As some objects have special attributes as maybe missing faces to close the object, the created dataset was checked and problems like these were handled to get as realistic images as possible.
3. **Different zoom levels**: To make our model more robust, we used different camera zooms for more variance in the data. Additionally, this makes our training data more realistic.

Main Configurations for Creating the Renderings

- Instead of brute forcing the distance we used a package called KDTree to efficiently calculate the distances between the object and the cloth.
- The images are first rendered with a transparent background and then the images are layered with a black background. By using this approach, we keep the sharp edges of the rendered cloth as well as block any influences from imported environments.
- For lighting a sun was used, as this allows for even lighting to not get any oversaturated spots on the cloth. For the distance cloth, the creation of shadows was disabled to have no distortions in the data for the training.