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

## **Overview**

This dataset comprises of 5000 images of 100 cloth-draped object-meshes from different angles with shading and 5000 images of 100 cloth-draped object-meshes with annotated distance as a per vertex gray-scale color without any shadows. These images are designed to be used for model-training for the recognition of cloth-object interaction/ recognition of underlying objects. Additionally, there are 40 images included that are rendered under the same conditions to be used as test data.

## **Features**

1. **Wide Variety of Shapes**: Our dataset includes a diverse range of object shapes, offering extensive opportunities for training and testing recognition algorithms across different scenarios.
2. **Everyday Item Focus**: The objects in this dataset represent everyday items, making it highly relevant for practical applications in object recognition and similar tasks.
3. **No Clipping Issues**: We have ensured that there is no clipping in any of the cloth or object files, providing clean and accurate data for your analysis.
4. **Realistic Cloth Physics**: The cloth simulations in this dataset have been crafted with attention to realistic physics, ensuring that the interactions and draping are as true-to-life as possible.
5. **Floor-Included Design for Realism**: Initially, objects include a floor to simulate a more realistic cloth interaction. However, for usability and clarity, the floor is removed in the final files. This ensures that the focus remains solely on the cloth and object while retaining the realistic dynamics influenced by the floor.
6. **Small File Sizes:** Despite the provided realism, the file sizes are rather small at around 600 MB for the 200 objects.

## **Main Configurations for Cloth Simulation**

* As previously mentioned, a Floor plane was included to render the object placed on the floor.
* Upon experimentation, we discovered, that enlarging the object for rendering the cloth simulation resulted in not just faster processing but also enhanced accuracy.
* Following a suggestion from another student, we optimized outcomes by disabling culling in the collision physics of the object.
* We settled on 170 cuts for the cloth, striking a balance between revealing object details and maintaining performance efficiency.
* The main part of our computing resources was directed into the collision and cloth quality.
* Bending stiffness was adjusted to 5, ensuring the cloth exhibited the desired number of folds.