1. Environment

- Linux: 18.04.5
- GPU: NVIDIA GeForce GTX 1080 Ti 11GB
- CUDA Version: 10.2
- Torch verison:1.10.0

2. Instructions

2.1. Gen 2D images from 3D model

We follow instruction of https://github.com/WeiTang114/BlenderPhong to generate 2D images with some modify in file *phong.py*

We use version blender-2.79-linux-glibc219-i686 download from https://www.blender.org/

Our generated data can find at https://drive.google.com/drive/folders/1njdHzfOZxfTJoWndiAM1aQqSdxUz2Io4?usp=sharing

2.2. Preprocessing

- Crop và resize:
  python center_crop_224.py \
  --root path/to/2d_image_folder \
  --output-dir path/to/output \
  --is-sketch
- Get Canny edges and apply Dilation Morphology:
  python get_canny_dilate.py \
  --root path/to/2d_image_folder \
  --output-canny path/to/canny_output \
  --output-canny-dilate path/to/canny_dilate_output \
  --is-sketch

2.3. Feature extractor

- Extract and save CLIP, HOG feature of 3D model and sketch images:
  python feature_extractor.py \
  --model-root path/to/model_ dilate _dilate \
  -- model-clip-save-dir path/to/output_model_CLIP_feature \
  --model-hog-save-dir path/to/output_model_HOG_feature \
  --sketch-root path/to/sketch_dilate \
  --sketch-clip-save-dir path/to/output_sketch_CLIP_feature \

```
    --sketch-hog-save-dir       path/to/output_sketch_HOG_feature \
```

2.4. Retrieval

Retrieval by CLIP feature, HOG feature, and ranking:

```
python sketch_retrieval.py \
    --model-clip-save-dir       path/to/model_CLIP_feature \
    --model-hog-save-dir        path/to/model_HOG_feature \
    --model-original-dir        path/to/original_model \
    --sketch-clip-save-dir      path/to/sketch_CLIP_feature \
    --sketch-hog-save-dir       path/to/ sketch_HOG_feature \
    --sketch-original-dir       path/to/original_sketch \
    --result-phase-1-json       path/to/output_retrieval_by_CLIP_json \
    --output-vis-dir            path/to/visualize_folder \
```