Prim3DRecVideo

Description

This is the README file for the **Prim3DRecVideo** term project.

This repository contains:

codebase you may need

some instructions about how to install the environment

some instructions about how to use the datset

some more details about the term project requirements

Installation

1. Install the environment using the .yml file

> cd Prim3DRecVideo
>
> conda env create -f environment.yml
>
> conda activate primreg

Code Running

1. For training, please run the code

> python main.py

some argument can be seen in the train.py code

2. For testing, please run the code

> python main.py —mode test

You may need to change the hard-coded paths in the code.

The code is just a reference, feel free to modify anything if you want.

Dataset

1. We mainly use the D3D-HOI dataset. The link and some details of the dataset can be find at

   https://github.com/facebookresearch/d3d-hoi

2. For each object category, the first 6 videos are to be tested. For example, for the laptop category, (b003-0001, b003-0002, b003-0004, b003-0005, b003-0006, b003-0007) are the test set. You can use any data for training expect the test set.
3. Do not use the object template mesh provided by D3D-HOI, use superquadric-composed object templates in ./SQ_templates.
4. Category template refrigerator and stroage is complex, so here you only need to choose from the following 6 categories:

   [dishwasher laptop microwave oven trashcan washingmachine]

Requirements

1. Do **NOT** need to reconstruct the human, just the object is enough.
2. For the visulization, videos with the rendered superquadric-composed object must be provided (The visual effect can be the same as the visulization in D3D-HOI, but in video format).
3. Each team can choose only one object category to reconstruct.

Reference Paper

1. Understanding 3D Object Articulation in Internet Videos
2. D3D-HOI: Dynamic 3D Human-Object Interactions from Videos
3. CHORE: Contact, Human and Object REconstruction from a single RGB image
4. Visibility Aware Human-Object Interaction Tracking from Single RGB Camera
5. Primitive-based 3D Human-Object Interaction Modelling and Programming