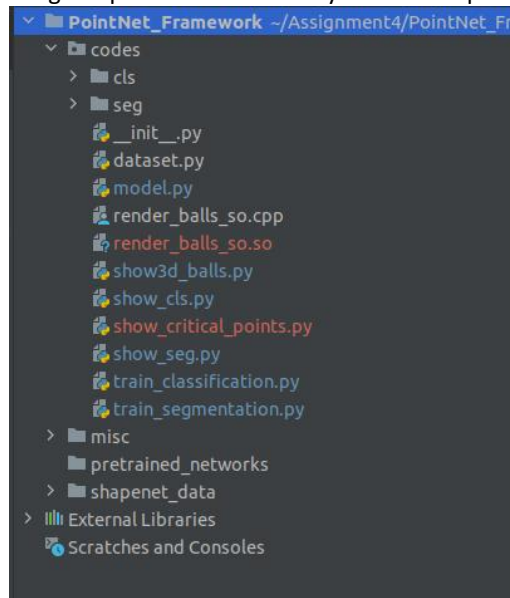


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PointNet

To run the command below, please make sure you have the same structure, otherwise, you need to config the path to the data dir yourself and please use the absolute path



System: Ubuntu
GPU: RTX 3060

cd codes

1. Average Test Accuracy for classification with feature transformation of all classes

python show_cls.py --model your_own_path/cls/20_latest_classification_true.pt --feature_transform

```
zbc@zbc-Legion-S7-15ACH6:~/Assignment4/PointNet_Framework/codes$ python show_cls.py --model /home/zbc/Assignment4/PointNet_Framework/codes/cls/20_classification_true.pt --feature_transform
Namespace(dataset='../shapenet_data/shapenetcore_partanno_segmentation_benchmark_v0', feature_transform=True, model='/home/zbc/Assignment4/PointNet_Framework/codes/cls/20_classification_true.pt', num_points=2500)
True
root is
../shapenet_data/shapenetcore_partanno_segmentation_benchmark_v0
{'Airplane': 0, 'Bag': 1, 'Cap': 2, 'Car': 3, 'Chair': 4, 'Earphone': 5, 'Guitar': 6, 'Knife': 7, 'Lamp': 8, 'Laptop': 9, 'Motorbike': 10, 'Mug': 11, 'Pistol': 12, 'Rocket': 13, 'Skateboard': 14, 'Table': 15}
{'Airplane': 4, 'Bag': 2, 'Cap': 2, 'Car': 4, 'Chair': 4, 'Earphone': 3, 'Guitar': 3, 'Knife': 2, 'Lamp': 4, 'Laptop': 2, 'Motorbike': 6, 'Mug': 2, 'Pistol': 3, 'Rocket': 3, 'Skateboard': 3, 'Table': 3} 4
Accuracy = 94.99%
```

2. Average Test mIoU for segmentation with feature transformation on "Chair" > 0.8

python show_seg.py --model your_own_path/seg/19_latest_segmentation_true.pt

--feature_transform --task mIoU

```
zbc@zbc-Legion-S7-15ACH6:~/Assignment4/PointNet_Framework/codes$ python show_seg.py --model /home/zbc/Assignment4/PointNet_Framework/codes/seg/19_latest_segmentation_true.pt --feature_transform --task mIoU --class_choice Chair
Namespace(class_choice='Chair', dataset='../shapenet_data/shapenetcore_partanno_segmentation_benchmark_v0', feature_transform=True, idx=1, model='/home/zbc/Assignment4/PointNet_Framework/codes/seg/19_latest_segmentation_true.pt', task='mIoU')
True
root is
../shapenet_data/shapenetcore_partanno_segmentation_benchmark_v0
{'Chair': 0}
{'Airplane': 4, 'Bag': 2, 'Cap': 2, 'Car': 4, 'Chair': 4, 'Earphone': 3, 'Guitar': 3, 'Knife': 2, 'Lamp': 4, 'Laptop': 2, 'Motorbike': 6, 'Mug': 2, 'Pistol': 3, 'Rocket': 3, 'Skateboard': 3, 'Table': 3} 4
22it [00:07, 3.05it/s]
mIoU for class Chair: 0.8351
```

3. Report quantity results(Accuracy) without feature transformation in classification

python show_cls.py --model your_own_path/cls/19_latest_classification_false.pt

```
zbc@zbc-Legion-S7-15ACH6:~/Assignment4/PointNet_Framework/codes$ python show_cls.py --model /home/zbc/Assignment4/PointNet_Framework/codes/cls/19_latest_classification_false.pt
Namespace(class_choice='Chair', dataset='../shapenet_data/shapenetcore_partanno_segmentation_benchmark_v0', feature_transform=False, idx=1, model='/home/zbc/Assignment4/PointNet_Framework/codes/cls/19_latest_classification_false.pt', num_points=2500, task='accuracy')
False
root is
../shapenet_data/shapenetcore_partanno_segmentation_benchmark_v0
{'Airplane': 0, 'Bag': 1, 'Cap': 2, 'Car': 3, 'Chair': 4, 'Earphone': 5, 'Guitar': 6, 'Knife': 7, 'Lamp': 8, 'Laptop': 9, 'Motorbike': 10, 'Mug': 11, 'Pistol': 12, 'Rocket': 13, 'Skateboard': 14, 'Table': 15}
{'Airplane': 4, 'Bag': 2, 'Cap': 2, 'Car': 4, 'Chair': 4, 'Earphone': 3, 'Guitar': 3, 'Knife': 2, 'Lamp': 4, 'Laptop': 2, 'Motorbike': 6, 'Mug': 2, 'Pistol': 3, 'Rocket': 3, 'Skateboard': 3, 'Table': 3} 4
Accuracy = 96.56%
```

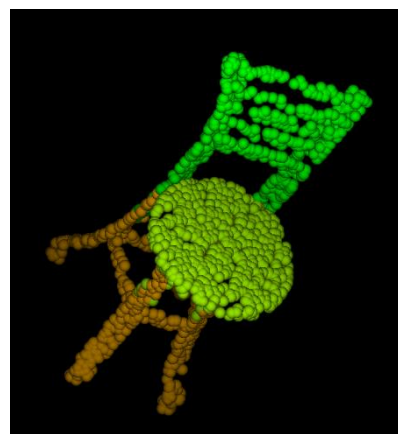
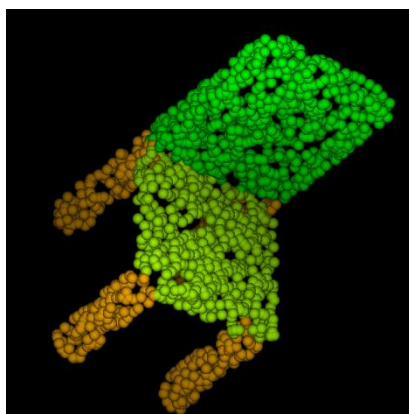
4. Report quantity results(mIoU) with and without feature transformation in segmentation

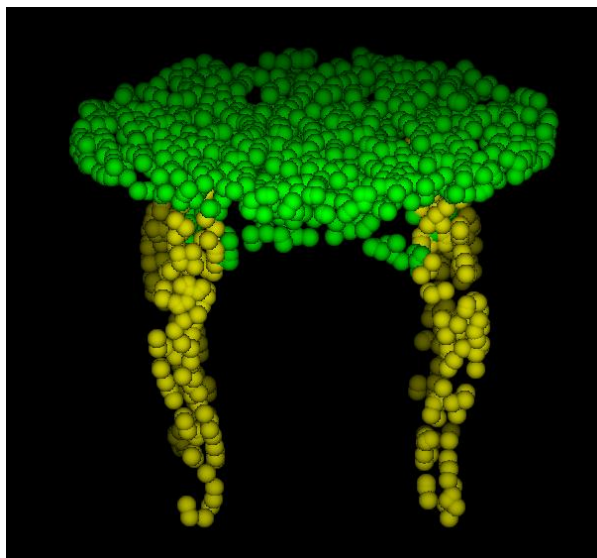
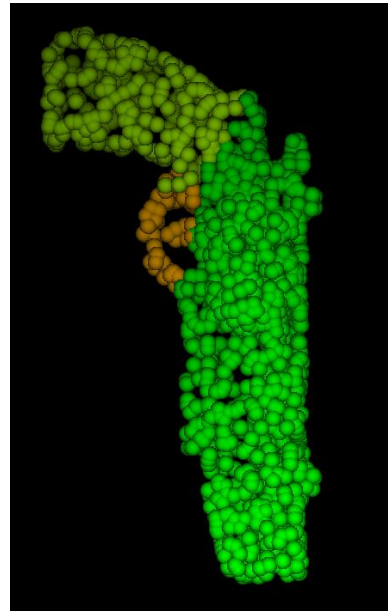
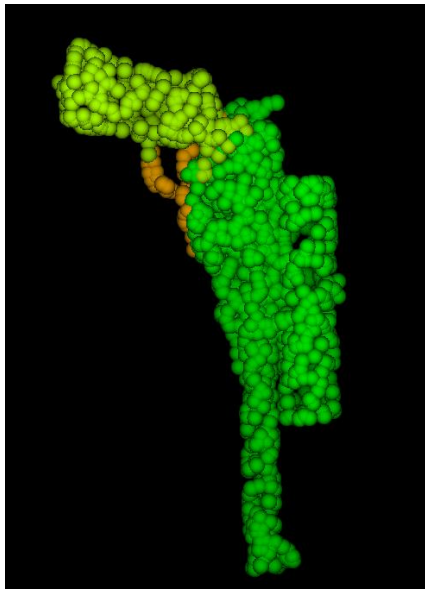
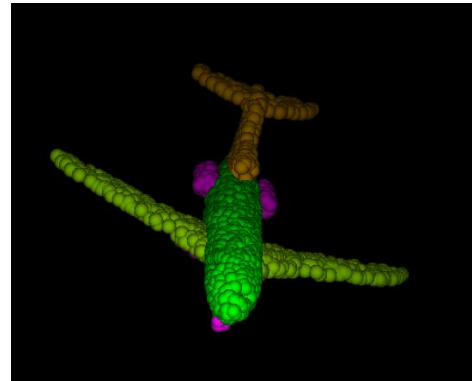
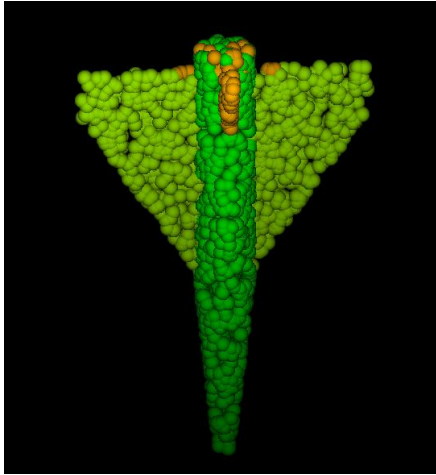
python show_seg.py --model your_own_path/seg/19_latest_segmentation_false.pt --task mIoU

```
zbc@zbc-Legion-S7-15ACH6:~/Assignment4/PointNet_Framework/codes$ python show_seg.py --model /home/zbc/Assignment4/PointNet_Framework/codes/seg/19_latest_segmentation_false.pt --task mIoU --class_choice Chair
Namespace(class_choice='Chair', dataset='../shapenet_data/shapenetcore_partanno_segmentation_benchmark_v0', feature_transform=False, idx=1, model='/home/zbc/Assignment4/PointNet_Framework/codes/seg/19_latest_segmentation_false.pt', task='mIoU')
False
root is
../shapenet_data/shapenetcore_partanno_segmentation_benchmark_v0
{'Chair': 0}
{'Airplane': 4, 'Bag': 2, 'Cap': 2, 'Car': 4, 'Chair': 4, 'Earphone': 3, 'Guitar': 3, 'Knife': 2, 'Lamp': 4, 'Laptop': 2, 'Motorbike': 6, 'Mug': 2, 'Pistol': 3, 'Rocket': 3, 'Skateboard': 3, 'Table': 3} 4
22it [00:05, 4.09it/s]
mIoU for class Chair: 0.8557
```

5. Visualization of at least 4 shape segmentation results from at least two classes.

python show_seg.py --model /seg/19_latest_segmentation_true.pt --task seg





6. Visualization of critical points of 4 shapes in classification

```
python show_cls.py --model your own path/cls/20_latest_classification_true.pt --  
feature --task critical points
```

