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DiffusionPointLabel: Annotated Point Cloud Generation with Diffusion Model Supplementary Material

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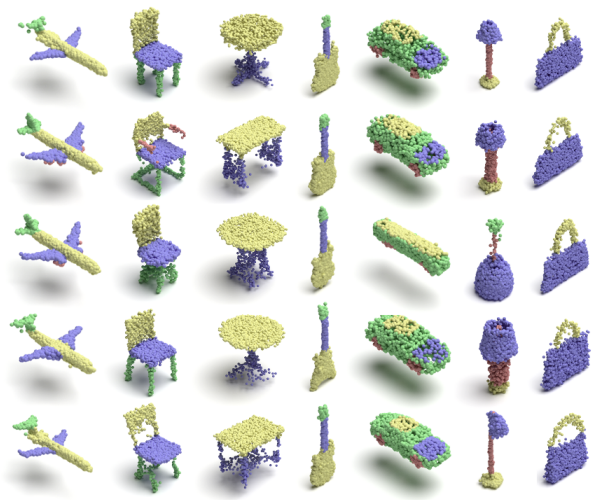

Figure 1: *Examples of generated point-label pairs.*

1. Examples of the generated dataset

Figure 1 shows some visualized examples of the generated point-label pairs produced by our method.

2. Application in a few-shot scenario

We further conduct an experiment to simulate a few-shot samples scenario. First, we sample a small set of GT point-label pairs to train on our method. Then we concatenate the GT samples with the generated point-label pairs as an augmented train set. Then we use the small set of GT point-label pairs and the augment train set to train a segmentation network, respectively. The segmentation results of mIoU metric are shown in Table 1. In this experiment, We generated 2000 point-label pairs and set the filter as 30%. We used a PointNet [QSMG17] as the segmentation network.

The segmentation results indicate that the augmented dataset can drastically improve the performance of the segmentation network.

Samples	128		256	
Category	w/o	w/	w/o	w/
Chair	60.87	79.36	74.54	80.59
Airplane	36.71	69.74	41.91	64.80
Guitar	49.98	83.90	69.01	86.82
Table	51.50	72.74	57.95	72.76
Lamp	44.35	65.03	61.15	67.71
Car	22.94	44.90	24.15	47.81

Table 1: *Comparison of the mIoU for segmentation task between the small set of GT samples and the augmented dataset. Samples: the number of samples in the small set of GT; w/: train the segmentation network with the augment dataset; w/o: train the segmentation network without the augment dataset.*

Moreover, it is worth noting that the improvement is more significant when the sample scale is small, particularly for the Chair and Car. Experimental results suggest that our work is indeed practical for annotated point cloud generation.

References

[QSMG17] Qi C. R., Su H., Mo K., Guibas L. J.: Pointnet: Deep learning on point sets for 3d classification and segmentation. In *Proceedings of the IEEE conference on computer vision and pattern recognition* (2017), pp. 652–660.

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