

Supplementary Materials for "CMT: Co-training Mean-Teacher for Unsupervised Domain Adaptation on 3D Object Detection"

Anonymous Authors

In this supplementary material, we provide more ablation studies and visualizations omitted in our main paper due to limits on paper length, including

- Section 1: Additional ablation studies.
- Section 2: Qualitative results.

As in the main paper, all ablation studies and visualization results in this supplementary file are conducted on the domain adaption case of Waymo \rightarrow KITTI, using SECOND-IoU as the 3D detection backbone.

1 ADDITIONAL ABLATION STUDIES.

Sensitivity Analysis of pseudo labels' confidence threshold.

As shown in Table 1, we investigate the effect of different confidence thresholds c_{th} on pseudo-label generation, as described in Equation (2) of our main paper. Our results indicate that the proposed method achieves optimal performance when c_{th} is around 0.6. Notably, if c_{th} is even larger, the performance decreases significantly. This is because a larger c_{th} reduces the number of positive examples available for self-training. Conversely, decreasing c_{th} leads to an excess of positive examples, which can introduce more errors into the training process and ultimately harm model performance.

Extend CMT to Multiple Categories. For autonomous driving vehicles, detecting cyclists on the road is crucial. Fortunately, CMT can be easily and effectively extended to other classes. As shown in Table 1, CMT improves cyclist detection performance to 54.38% in AP_{3D}, surpassing previous state-of-the-art methods. Compared to ST3D++, our approach achieves a 0.97% gain. These

improvements demonstrate the consistent effectiveness of CMT for cyclist detection.

2 QUALITATIVE RESULTS

Figure 1 presents qualitative results of cross-domain adaptation, demonstrating the effectiveness of our CMT in improving adaptation performance. Compared to Source Only and ST3D, which produce some negative predictions, CMT generates clean and more accurate predictions. This improvement is attributed to the stable and adaptive pseudo supervision provided by CMT to the detector.

Table 1: Performance under different confidence thresholds c_{th}

c_{th}	AP _{BEV}	AP _{3D}
0.4	83.18	68.78
0.5	83.47	66.53
0.6	85.19	72.07
0.7	80.95	65.32
0.8	71.18	56.25

Table 2: Performance under different confidence thresholds c_{th}

Methods	Source Only	SN	ST3D	ST3D++	Ours
AP _{3D}	43.84	41.43	46.09	53.43	54.38

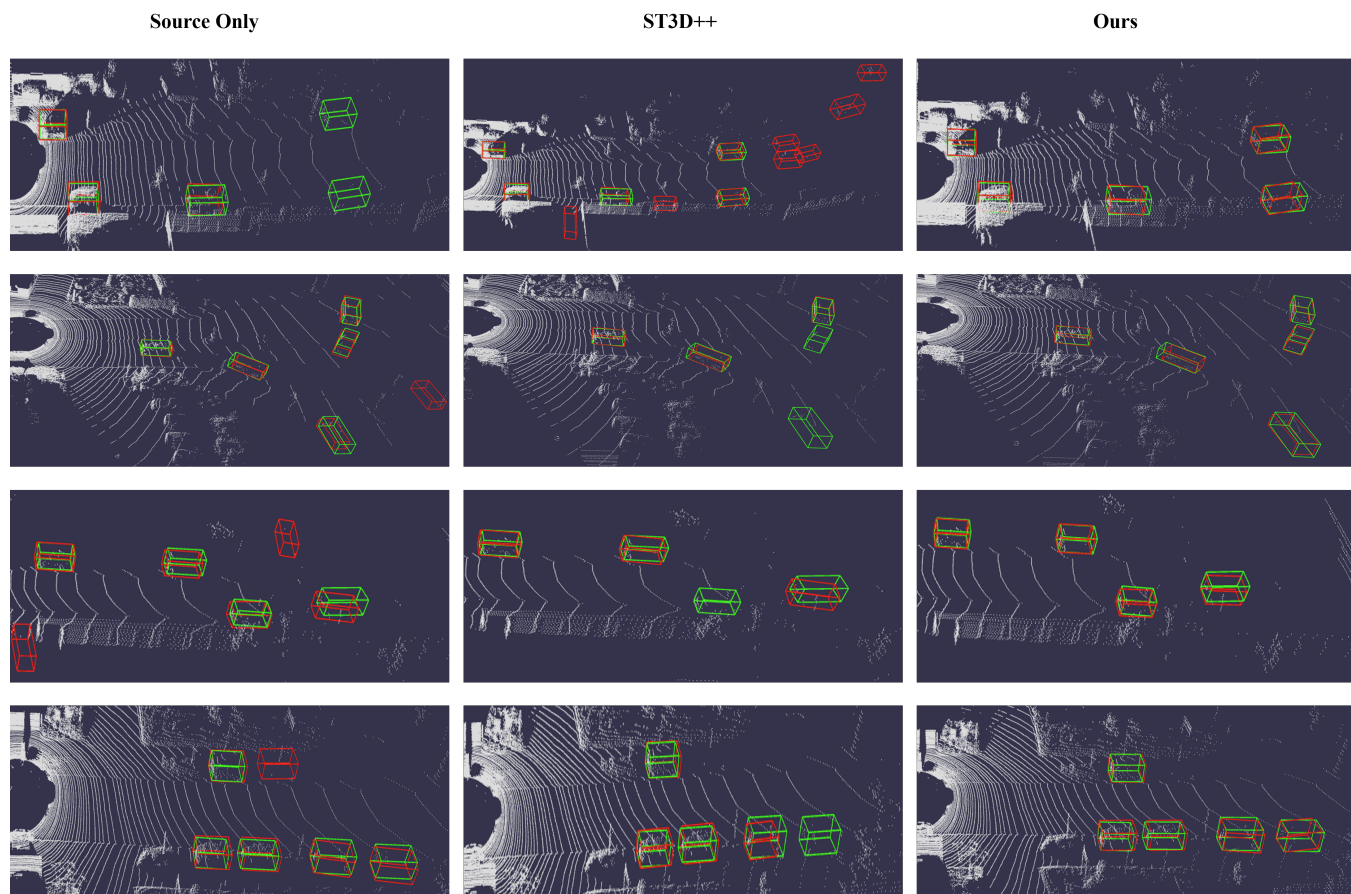


Figure 1: Qualitative results of Waymo \rightarrow KITTI adaptation task.