Week 7 Report

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August 2022

1 Week 7 Goals

This week, our main goal was to start implementing our own scene flow network, and have it training by our next meeting.

2 Scene Flow Implementation

2.1 Dataset Preprocessing

We will be downsampling the SemanticKITTI scans to 8192 points, mostly belonging to dynamic objects for the time being. Later on, we need to be able to adapt it to our SemanticKITTI scans. We are thinking of using rigid-body transformation for the points of non-dynamic objects.

2.1.1 Model Implementation

As a starting point, we decided that we could go with downscaling and adapting the original PointPWC to have less parameters and work without the RGB values.

2.2 Losses

Previously, we discussed about the loss functions for self-supervised training, in Just Go With The Flow[1] and PointPWC[2]. We will be adapting the Nearest Neighbor and Cycle Consistency losses from Just Go With The Flow; Chamfer distance, smoothness Constraint and Laplacian regularization from PointPWC.

References

[1] H. Mittal, B. Okorn, and D. Held, "Just go with the flow: Self-supervised scene flow estimation," 2019. [Online]. Available: https://arxiv.org/abs/1912.00497

[2] W. Wu, Z. Wang, Z. Li, W. Liu, and L. Fuxin, "Pointpwc-net: A coarse-to-fine network for supervised and self-supervised scene flow estimation on 3d point clouds," *arXiv preprint arXiv:1911.12408*, 2019.