Semantic Object Reconstruction via Casual Handheld Scanning Supplementary material

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ACM Reference Format:

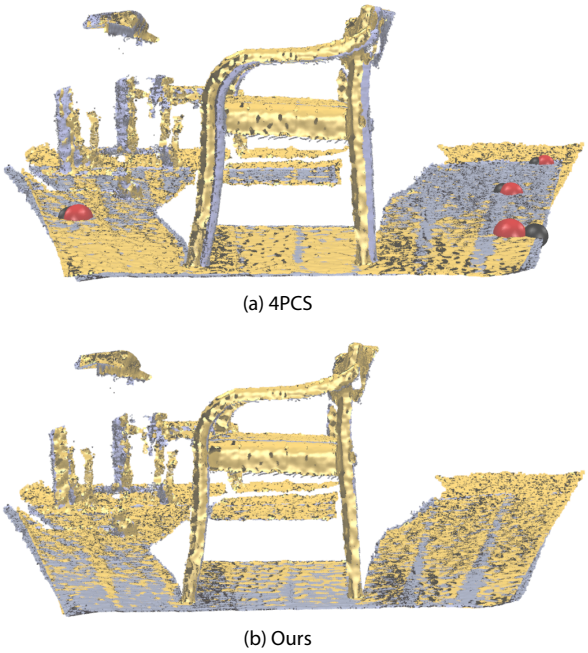
Ruizhen Hu, Cheng Wen, Oliver van Kaick, Luanmin Chen, Di Lin, Daniel Cohen-Or, and Hui Huang. 2018. Semantic Object Reconstruction via Casual Handheld Scanning Supplementary material. *ACM Trans. Graph.* 37, 6, Article 219 (November 2018), 1 page. https://doi.org/10.1145/3272127.3275024

1 ADDITIONAL EXPERIMENTS

In this section, we present additional experiments to compare our semantic registration method to 4PCS [Aiger et al. 2008].

4PCS is a method for global registration between two sets of point clouds, which has never been used for RGBD sequence reconstruction. Thus, to compare with 4PCS, as a qualitative example, we select two adjacent frames from a sequence, and then compare the registration results of our methods and 4PCS. Figure 1 compares the reconstruction results obtained with 4PCS and our method on two randomly selected frames from a chair sequence.

We observe in the part highlighted with the red box that our method with semantics leads to a better alignment than 4PCS, as the yellow and gray scans have more overlap. Note that we obtained the alignment in (a) by running 4PCS with its default parameters. The parameters may be tweaked to obtain a better alignment. However, the alignment in (a) already took about 15 seconds to compute, while our alignment takes only 0.2 seconds including the time of loading the semantic information. Tweaking the parameters to perform a larger sampling of transformations with 4PCS may increase the execution time prohibitively. Moreover, such a tweaking of parameters would have to be performed individually for each pair of frames, which is unpractical for reconstructing long sequences.



(a) 4PCS

(b) Ours

Fig. 1. Comparison of our semantic registration to 4PCS.

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0730-0301/2018/11-ART219 $15.00
https://doi.org/10.1145/3272127.3275024

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