

ToF-360 – A Panoramic Time-of-flight RGB-D Dataset for Single Capture Indoor Semantic 3D Reconstruction

Supplementary Material

The supplementary material presents some examples comparing the difference in quality between our ToF-360 dataset and the Stanford-2D-3D-S dataset [3] a popular public dataset most comparable to our. We compare the stitching, depth map, as well as the annotation quality between both datasets and show some more examples of the data in our ToF-360. Since the Stanford-2D-3D-S dataset uses the same sensor and the same labeling strategy as the Matterport3D dataset [6] the comparison applies on to it as well. Figure 7 shows that our sensor provides higher quality stitching compared to the Stanford-2D-3D-S. Additionally, we obtain

better alignment by stitching only two hemispheres which is limited compared to the 6 stitchings required for Stanford-2D-3D-S.

As explained in Section 5.2, our ToF-360 provides depth images without any back-projection from reconstructed 3D meshes. In other words, instead of constructing the panoramic depth from multi-viewpoint measurements, we obtain a depth image independently for each recording point. Figure 8 compares the improvements resulting from our depth measurement technique compared to stitching of re-projected meshes.

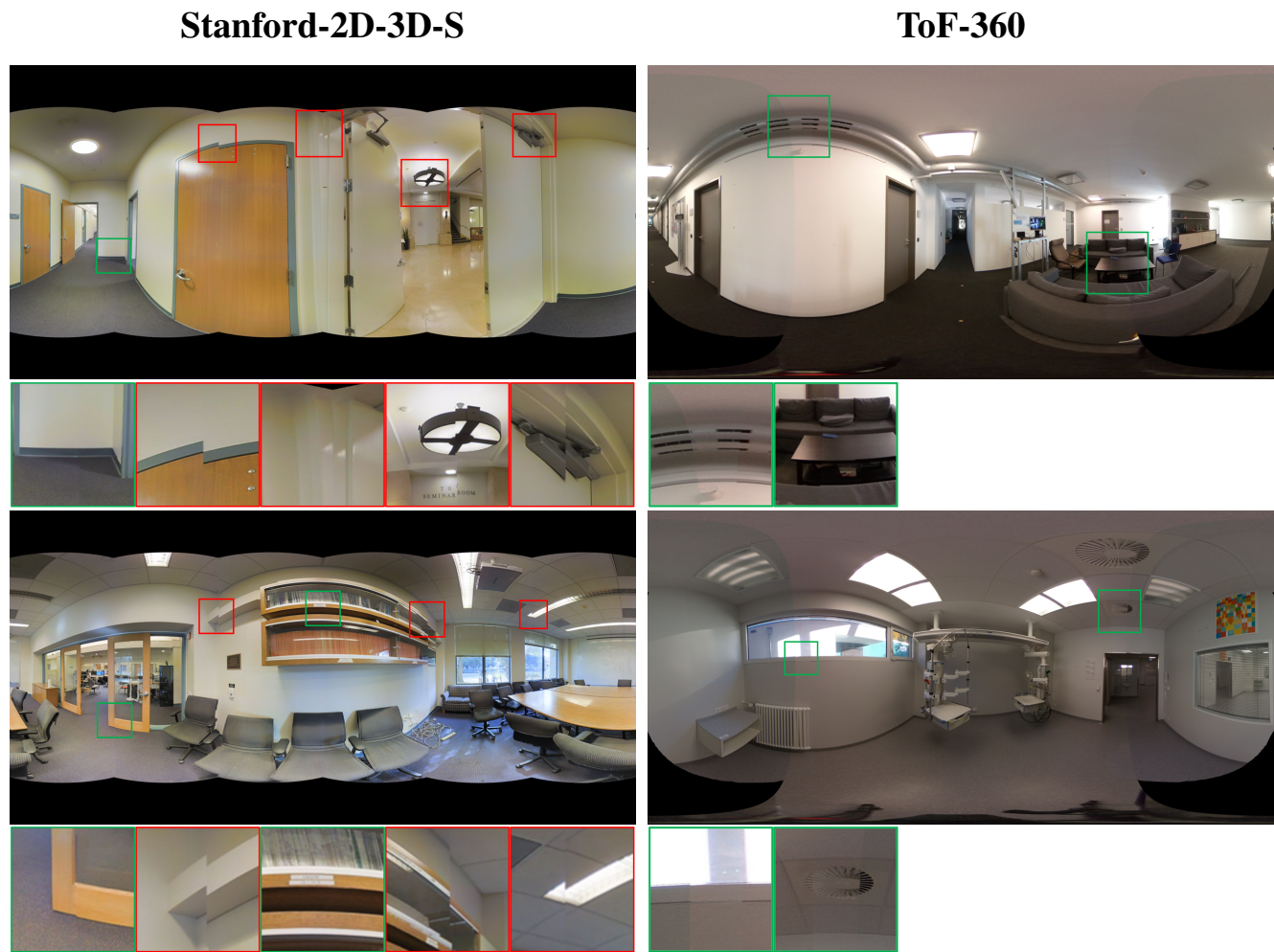


Figure 7. Comparison of image and stitching quality between the Stanford-2D-3D-S dataset (left) and our ToF-360 dataset (right). Green boxes mark properly aligned stitching, while red boxes show misaligned stitches.

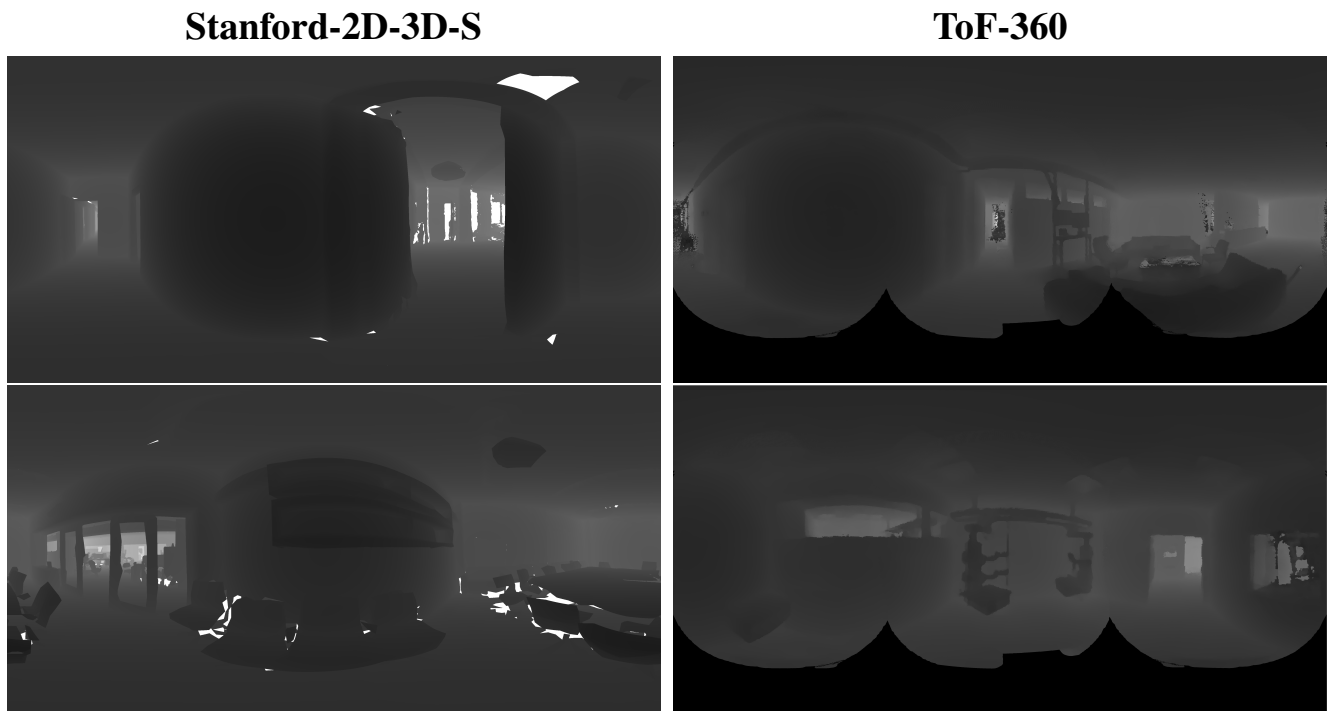


Figure 8. Qualitative depth comparison between the Stanford-2D-3D-S dataset (left) and our ToF-360 dataset (right).

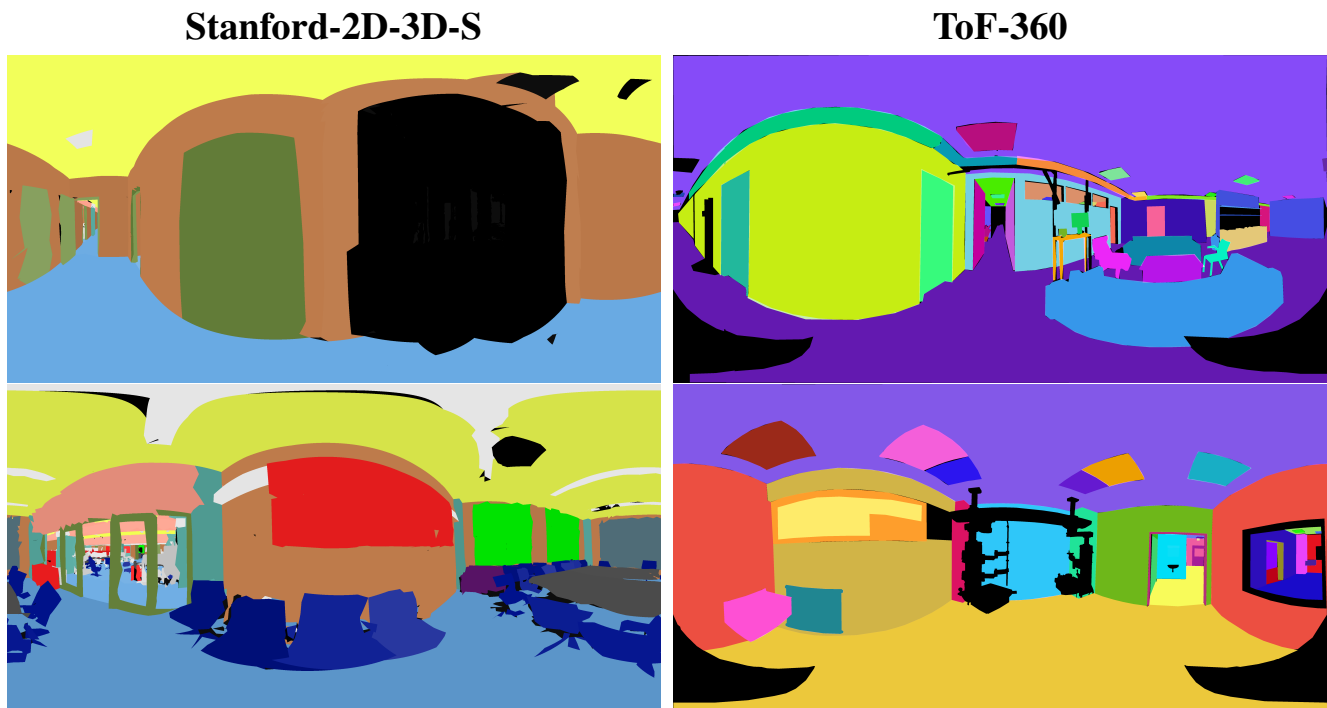


Figure 9. Comparison of instance labels between the Stanford-2D-3D-S dataset (left) and our ToF-360 dataset (right).

Whereas the Stanford-2D-3D-S [3] and Matterport3D [6] dataset labeling is done 3D on point clouds and then pro-

jected onto the images, our ToF-360 annotations are done directly on the images. While our approach for annotation

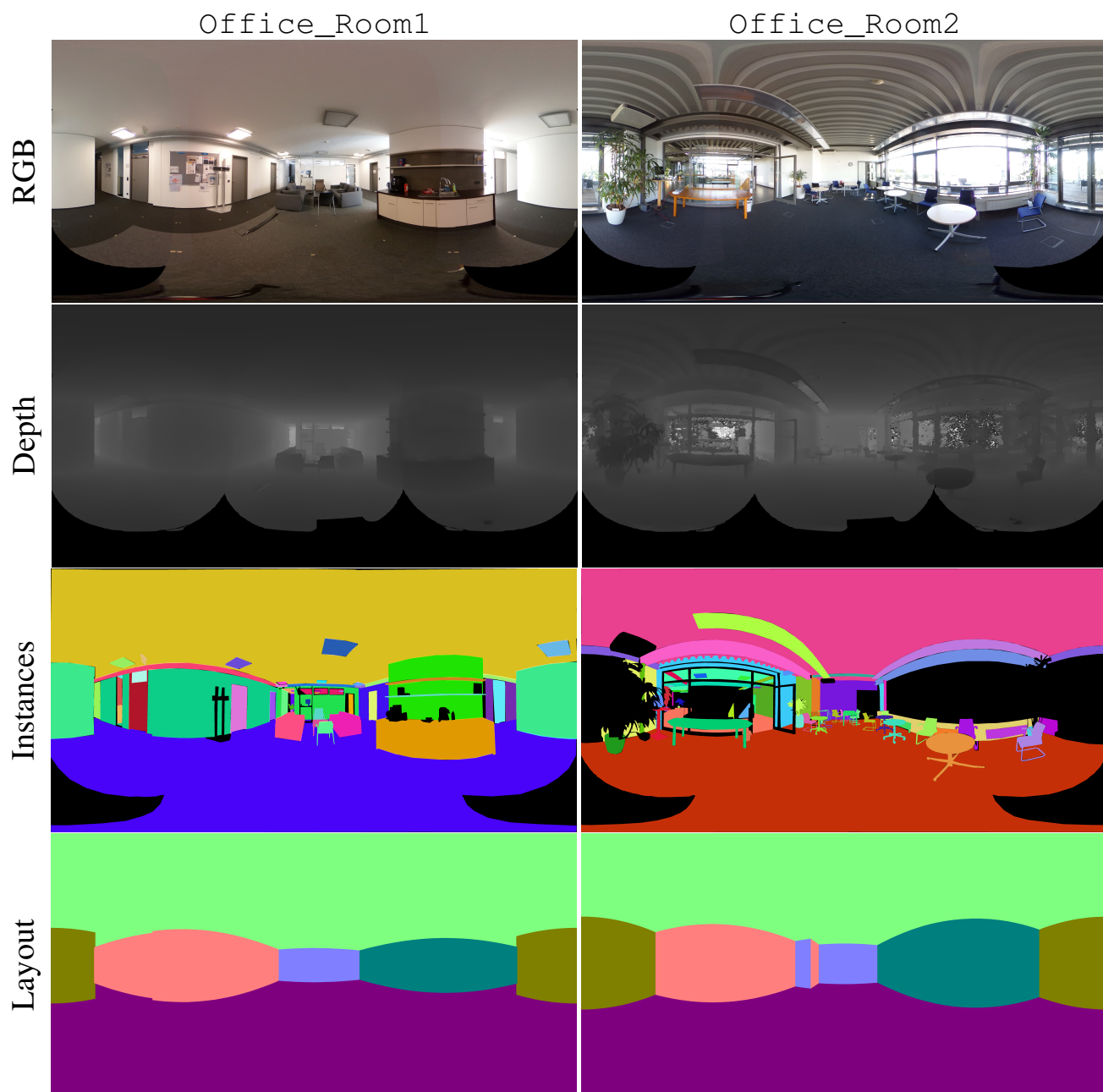


Figure 10. Examples of ToF-360 dataset captured in offices.

is more time consuming, it provides superior, pixel-accurate labels as shown in Figure 9.

Figures 10 and 11 shows more examples from the different areas in the ToF-360 dataset with depth, instance labels, as well as the layout.

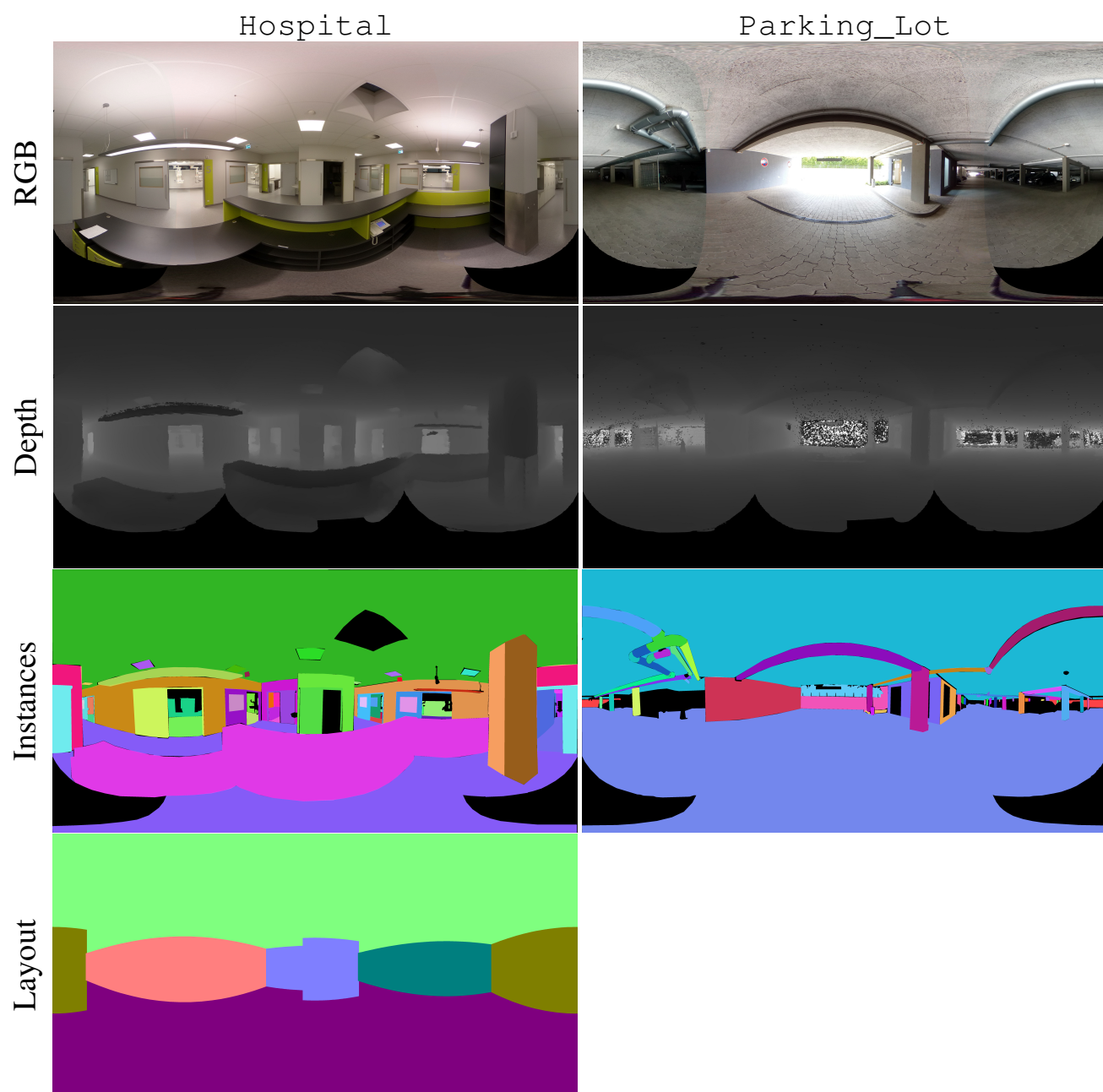


Figure 11. Examples of ToF-360 dataset captured in a hospital and parking lot.