Supplemental Material "Surface Reconstruction from Point Clouds by Learning Predictive Context Priors"

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1. Surface Reconstruction Results

Visual Comparison with Poisson Reconstruction. The comparison with Poisson reconstruction is shown in Fig. 1 (b). We show Fig. 1 (a) in our paper, here we highlight our advantage over Poisson reconstruction in Fig. 1 (b). As we can see, our method can reveal more and finer geometry details, where the values indicate the normal consistency. Note that Poisson reconstruction requires normal of each point which we do not need.

Reconstructions for Synthetic Data. We present more surface reconstruction in this section. We first visualize 50 shapes that are randomly selected from each one of Plane, Chair, Table classes in ShapeNet [1]. We show these reconstructions in Fig. 2, Fig 3, and Fig. 4, respectively. Then, we visualize 50 shapes that are randomly selected from ABC [3] in Fig. 6. Finally, we also show all the reconstructions from Famous dataset in Fig. 5. All these reconstructions demonstrate our ability of reconstructing high fidelity surface from point clouds.

Reconstructions for Real Scan. We also show surface reconstruction comparison for a real scanned scene in Fig 7. The comparison with LIG [2] and ConvOccNet [4] shows that our method can reveal more details in a complex scene. We also show the reconstructed surface with the texture in Fig 8. Please watch our video supplementary for more details.

2. Visualization

We also provide a visualization for the optimization on a 2D cases in our video. Please see more details.

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3. Source Code and data

Code and data are available at https://github.com/mabaorui/PredictableContextPrior.

References

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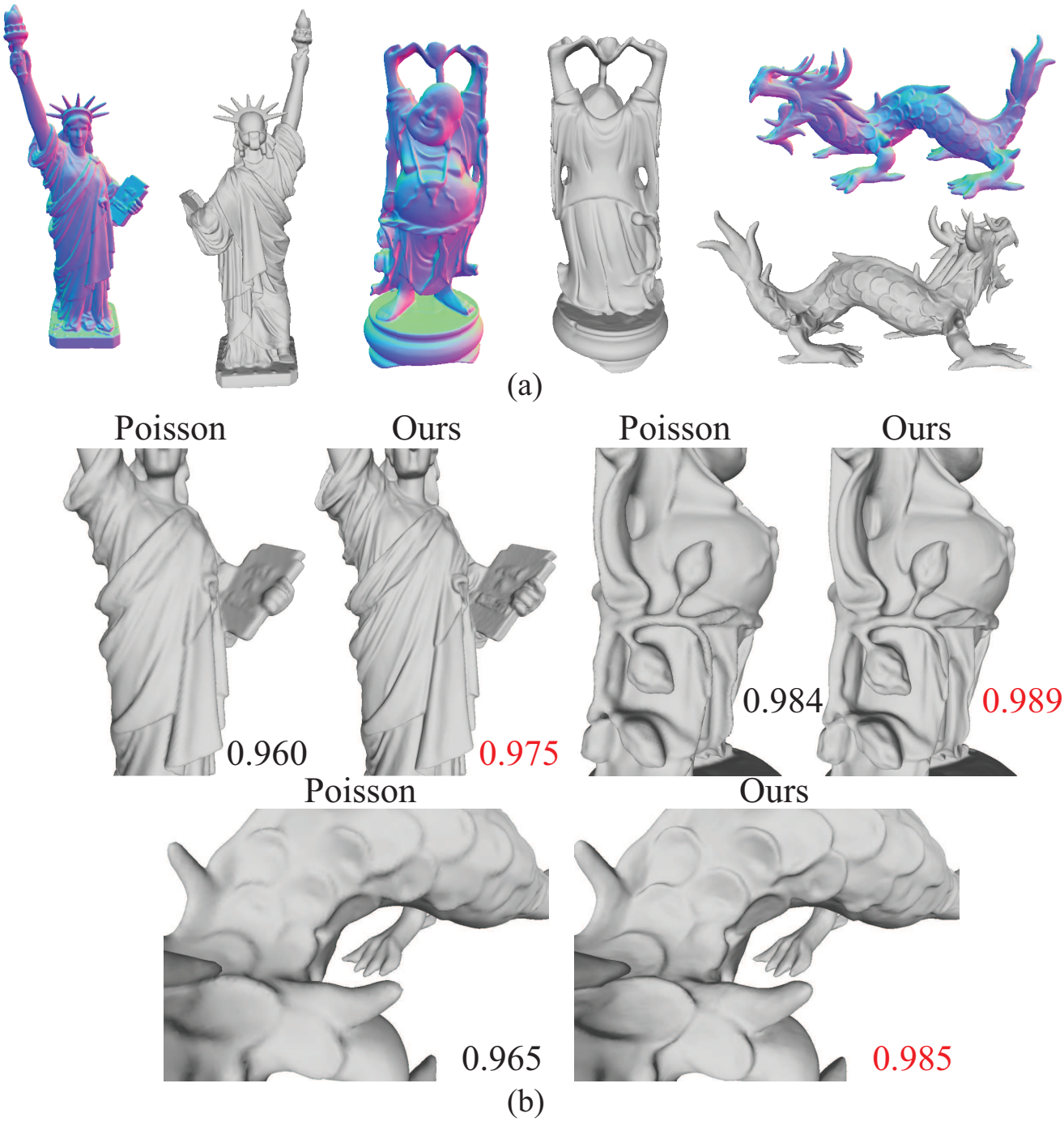


Figure 1. (a) Our reconstruction results with normal maps. (b) Visual comparison with Poisson reconstruction.

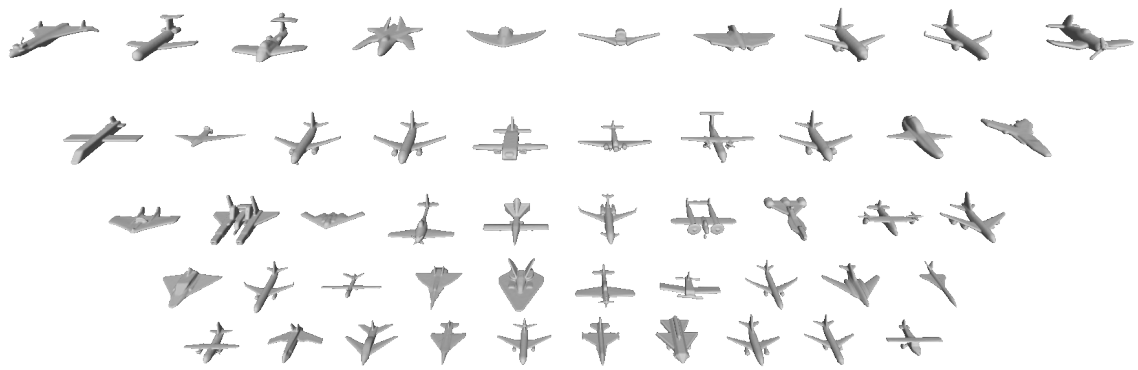


Figure 2. Surface reconstruction in Plane class under ShapeNet.

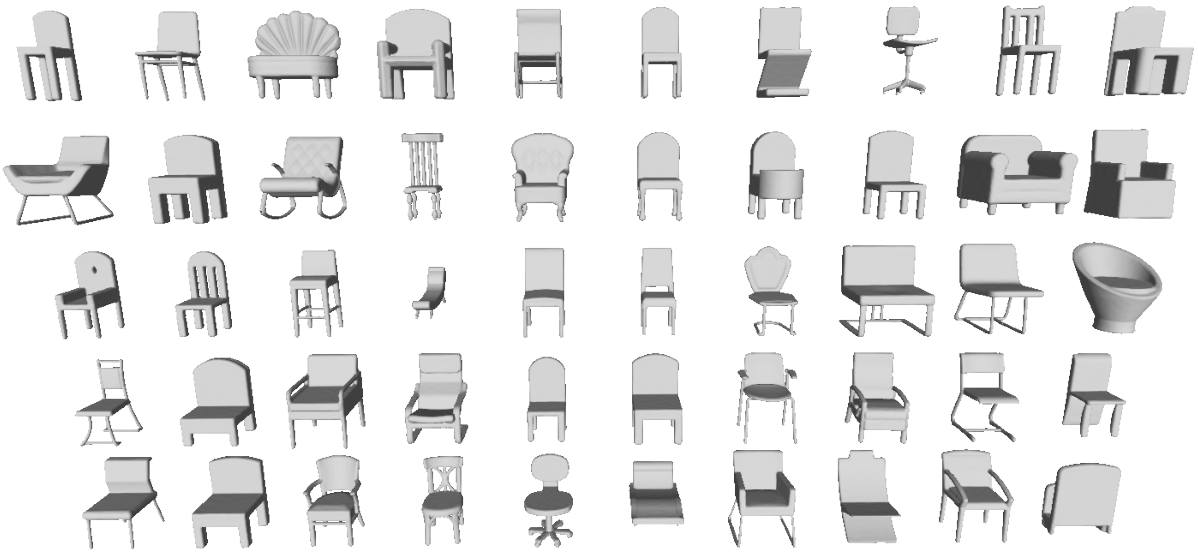


Figure 3. Surface reconstruction in Chair class under ShapeNet.

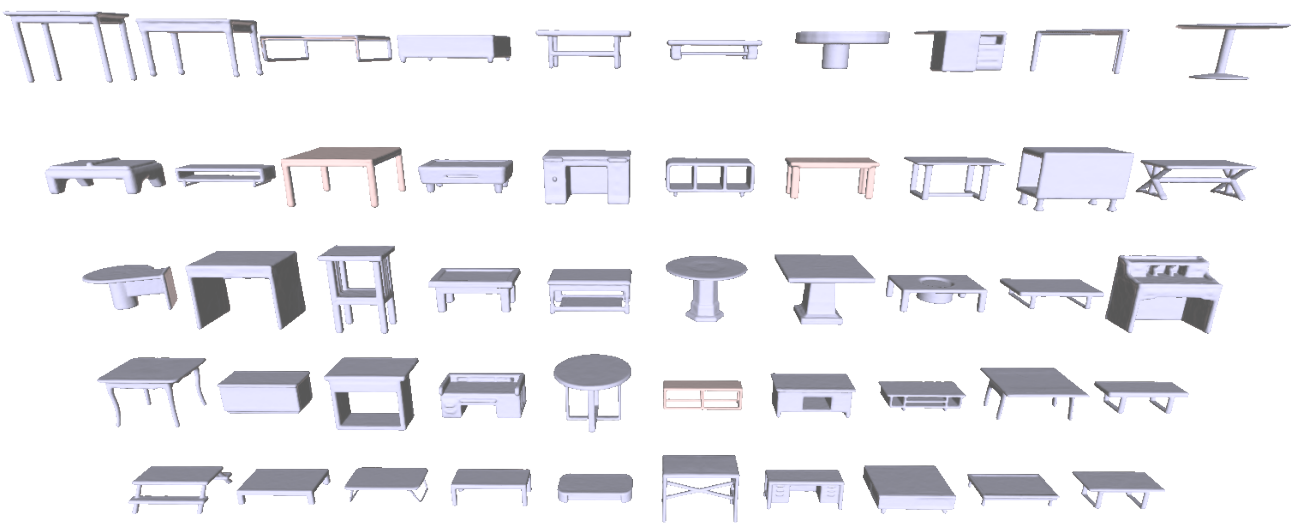


Figure 4. Surface reconstruction in Table class under ShapeNet.

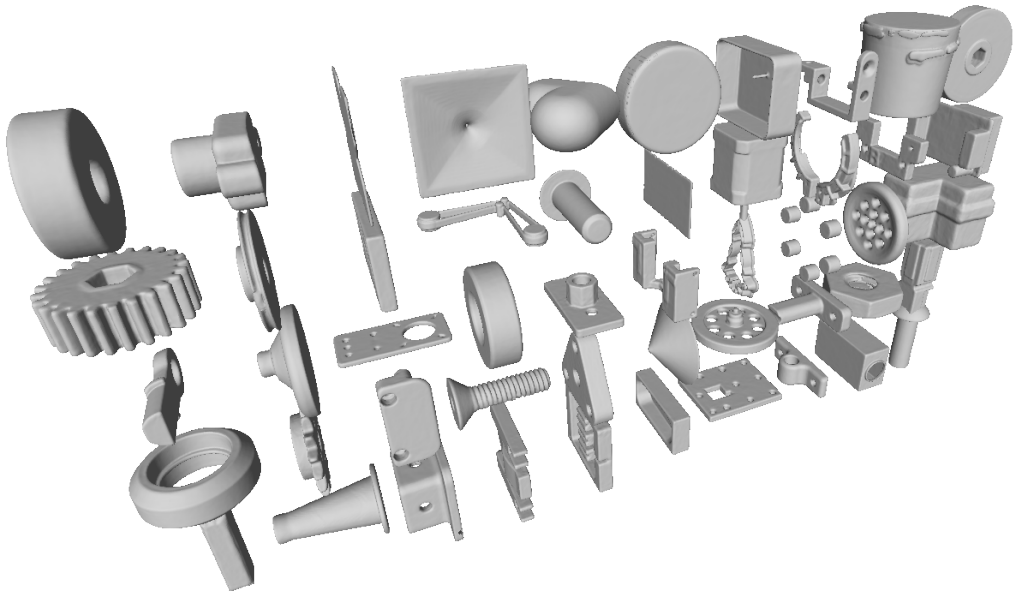


Figure 5. Surface reconstruction under ABC dataset.

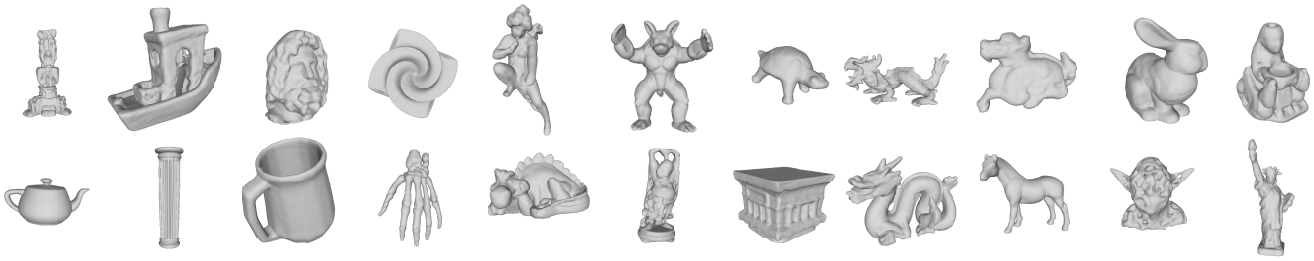
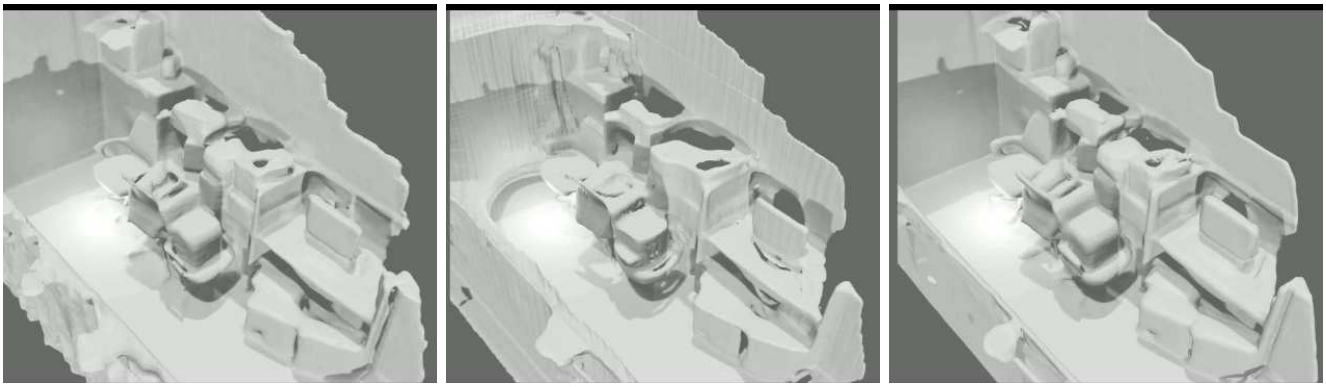


Figure 6. Surface reconstruction under Famous dataset.



(a) LIG (b) ConvOccNet (c) Ours

Figure 7. Surface reconstruction comparison for a real scanned scene.

Figure 8. Surface reconstruction of a real scanned scene with texture.