SUPPLEMENTAL DOCUMENT FOR “UNSUPERVISED SHAPE COMPLETION VIA DEEP PRIOR IN THE NEURAL TANGENT KERNEL PERSPECTIVE”

A MORE RESULTS

All 10 validation models and 20 test models used in ablation study and comparisons are shown in Fig. 1 and Fig. 2, respectively. The partial scans, ground truth shapes and reconstructed models in Figs. 1 and 7 of the main paper are shown in Fig. 3.

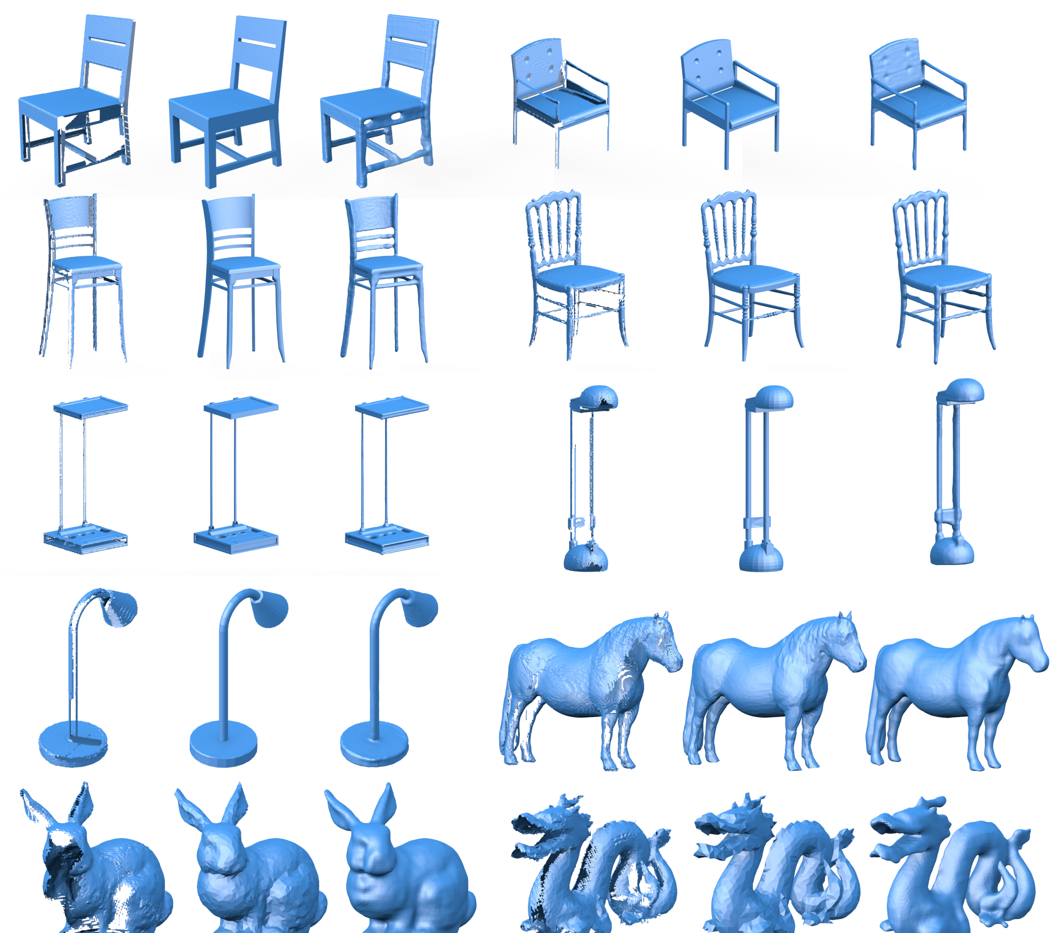


Fig. 1. All 10 validation models used for ablation study and comparison. Each example shows the partial scan, ground truth shape and our result.

B MIRROR REFLECTION FOR BILATERAL SYMMETRY AUGMENTATION

We have tested with the mirror reflection transformation for augmenting bilaterally symmetric shapes. The results are shown in Fig. 4. For the table model which is mirror-symmetric in two directions, it works as well as the random rotations we have used. But we stick to the random rigid rotations for augmentation, as they are pervasively applicable to all objects regardless of symmetry.

C NOISE INPUT

On noisy input, more epochs of the optimization would make the network overfit to the noise. In Fig. 5 we show the predictions of the network under different epochs with the same noisy input. It can be seen that while the 2k result has a regular surface, the 6k result starts to capture the high frequency noise of the input scan.

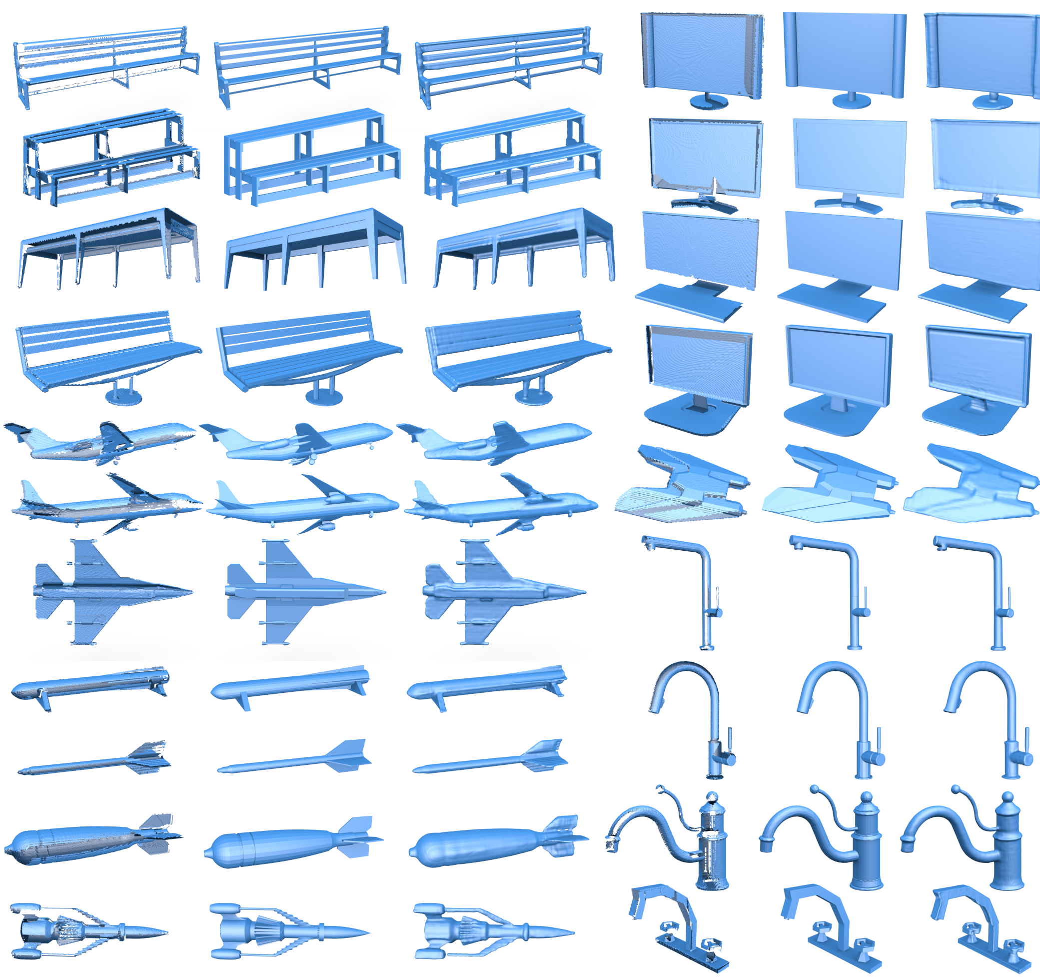


Fig. 2. All 20 test models used for ablation study and comparison. Each example shows the partial scan, ground truth shape and our result.

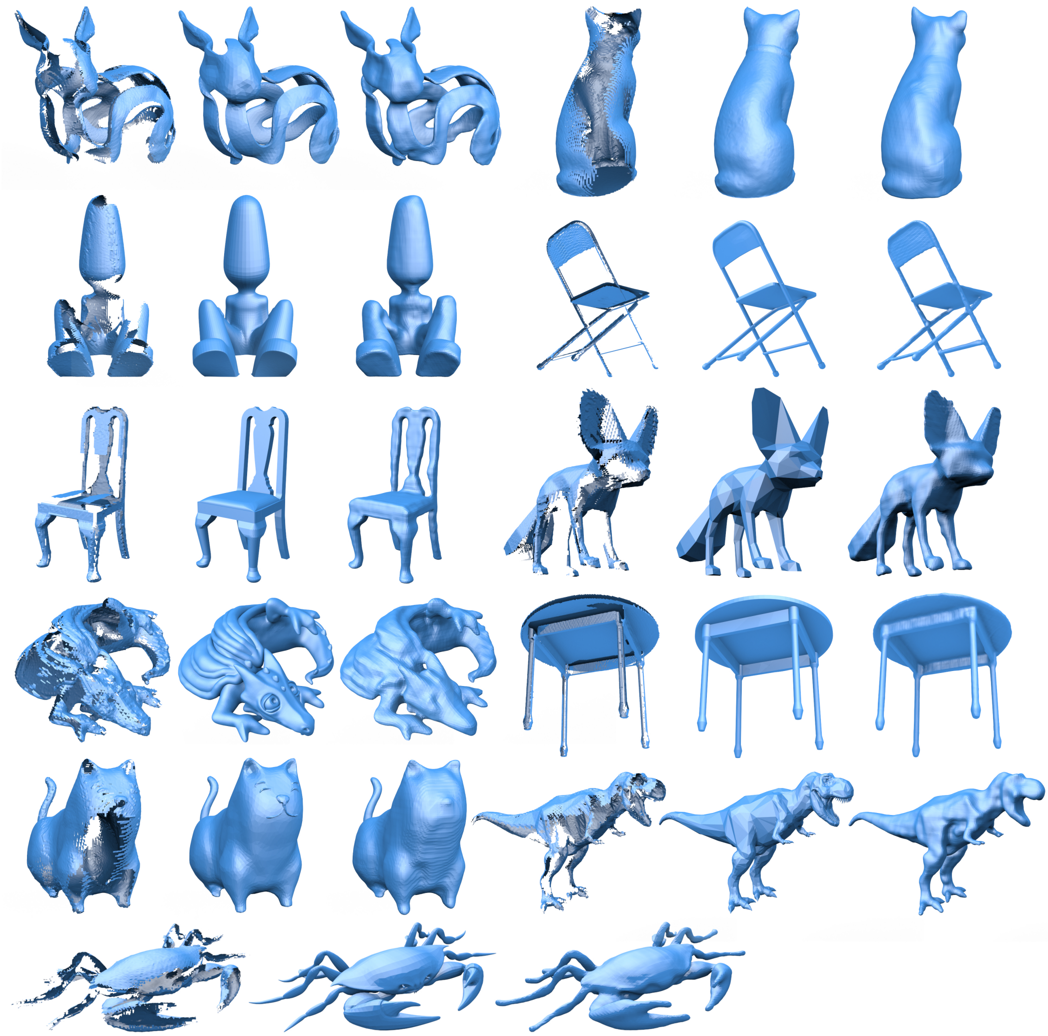


Fig. 3. All models shown in the teaser and gallery, with ground truth shapes.

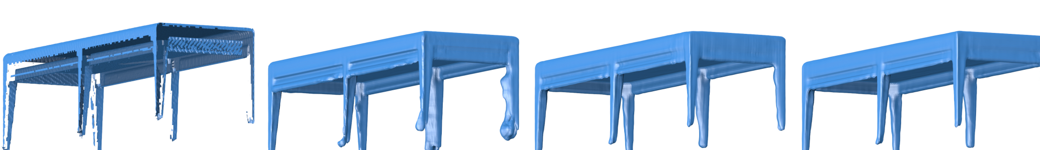
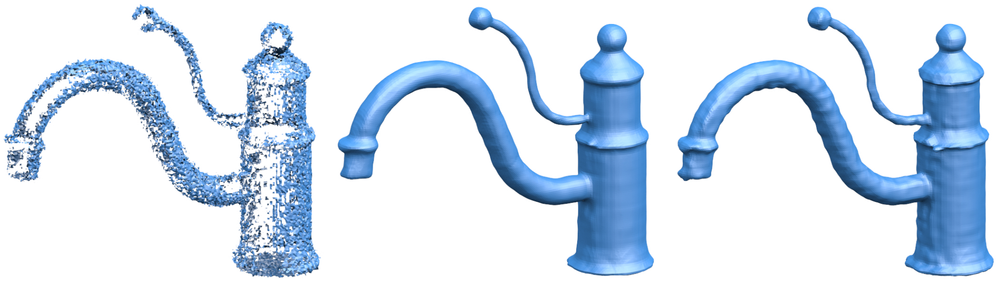


Fig. 4. Mirror reflection augmentation for a bilaterally symmetric object. From left to right: the input partial scan, the result without augmentation, result with 24 random rotations, result with 8 random rotations further mirror-reflected in the front/back and left/right directions. The right two results have similar high quality.



(a) noisy input (b) 2000 epochs (c) 6000 epochs

Fig. 5. Results after different number of epochs, with input obtained from depth maps corrupted by Gaussian noise with $\sigma = 2e{-}4$.