

Neural Cages for Detail-Preserving 3D Deformations

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In the paper, we detailed two applications of our method: stock amplification and deformation transfer. In this document, we provide additional results for each application.

Stock amplification via deformation. In Table 1, 2 and 3 we show the entire deformation results from the *chair*, *table* and *car* categories. As mentioned in the main paper, the test sets consist of 100 pairs of unseen source and target shapes randomly sampled from ShapeNet dataset [2].

Deformation transfer. In Table 4 we provide additional results for 100 unseen target poses randomly sampled from the dataset provided by [3]. For each target pose, we show the deformed shape for the original source shape used during training as well as the transferred deformation for three novel source shapes, a woman from FAUST [1], a skeleton and a robot.

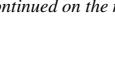
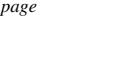
Two training variations are shown in Table 4. On the left, a rest-pose human is used as the source shape during training, whereas on the right a T-pose human is used. The first variation shows less distortion, but tends to underperform when large arm articulation is present in the target pose. The second variation shows more distortion on the arms but tends to match the articulation of the target poses slightly better, especially when the arms are up. The results illustrated in the main paper are generated using the first variation.

We think these distortions are related to the affine-invariance of MVC, and should be improved with Green Coordinates.



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Source	Deformed	Target	Source	Deformed	Target	Source	Deformed	Target	
									
									
									
									
									
									
									
									
									
									
									

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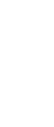
Source	Deformed	Target	Source	Deformed	Target	Source	Deformed	Target
								

Table 3: The deformation results of the *car* category.

target	training source	novel sources			training source	novel source		
								
								
								
								
								
								
								
								
								
								
								

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target	training source	novel sources		training source	novel source		
							
							
							
							
							
							
							
							
							
							
							
							
							
	<img alt="Humanoid 196" data-bbox="1						

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target	training source	novel sources			training source	novel source

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target	training source	novel sources		training source	novel source
				<img alt="Human skeleton model	

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target	training source	novel sources		training source	novel source

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target	training source	novel sources		training source	novel source

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target	training source	novel sources		training source	novel source

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target	training source	novel sources		training source	novel source
	<img alt="Human training				

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target	training source	novel sources		training source	novel source
				<img alt="Human skeleton model	

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target	training source	novel sources			training source	novel source	
					Table 4: Results		

References

- [1] Federica Bogo, Javier Romero, Matthew Loper, and Michael J Black. FAUST: Dataset and evaluation for 3D mesh registration. In *CVPR*, pages 3794–3801, 2014.
- [2] Angel X. Chang, Thomas Funkhouser, Leonidas Guibas, Pat Hanrahan, Qixing Huang, Zimo Li, Silvio Savarese, Manolis Savva, Shuran Song, Hao Su, Jianxiong Xiao, Li Yi, and Fisher Yu. ShapeNet: An information-rich 3D model repository. Technical Report arXiv:1512.03012 [cs.GR], 2015.
- [3] Thibault Groueix, Matthew Fisher, Vladimir G Kim, Bryan C Russell, and Mathieu Aubry. 3D-CODED: 3D correspondences by deep deformation. In *ECCV*, 2018.