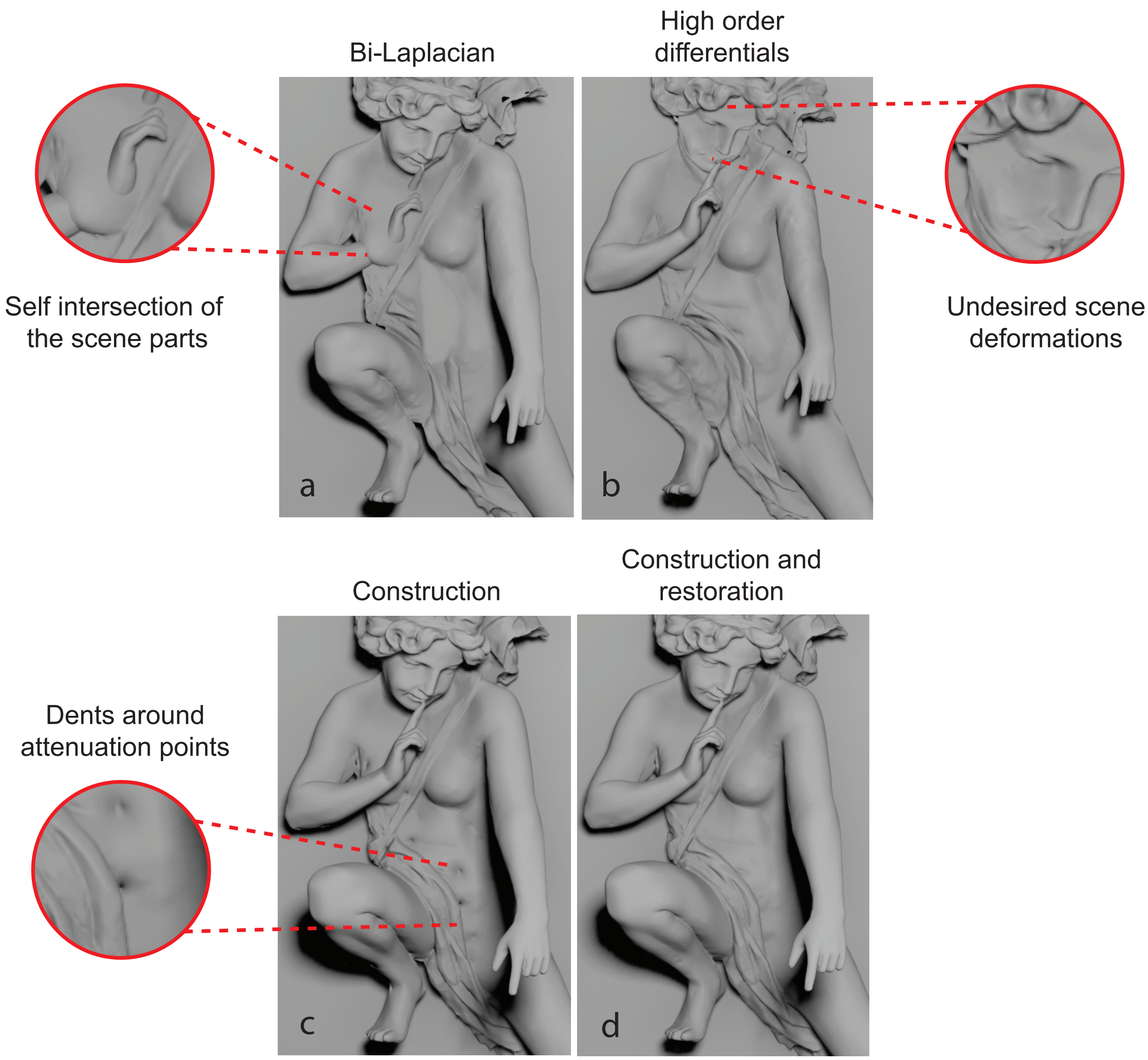
Supplementary Material: High Reliefs from 3D Scenes



1 Different Solutions

In order to obtain the final relief geometry, we use two fitting steps, construction and restoration, instead of using one step fitting methods such as bi-Laplacian, higher order Laplacians, or other blending approaches such as biharmonic weights. The previous mesh deformation works mostly consider a certain region of interest (ROI), where the ROI is bounded by a stationary belt of anchors [SCOL04]. On the other hand, our control points are sparsely distributed over scene which results in dents or raises around control points when the positional constraints are fixed to reconstruct (c). We observe that when the positional constraints are inserted into the system in the least square sense (a) or higher order differential coordinates are used (b), the errors around attenuation points are smoothed but they cause important scene deformations. We prefer to fix positional constraints and solve the system (c), then re-construct the parts having high errors by using high order differentials (d). As shown above, our two steps fitting procedure works better than the usage of higher order differentials or solving positional constraints in the least square sense in a single step.

2 Changing parameters

Decreasing compression factor α reduces the depth range but results in the loss of details. ($k = 128$, $\beta = 0.8$)

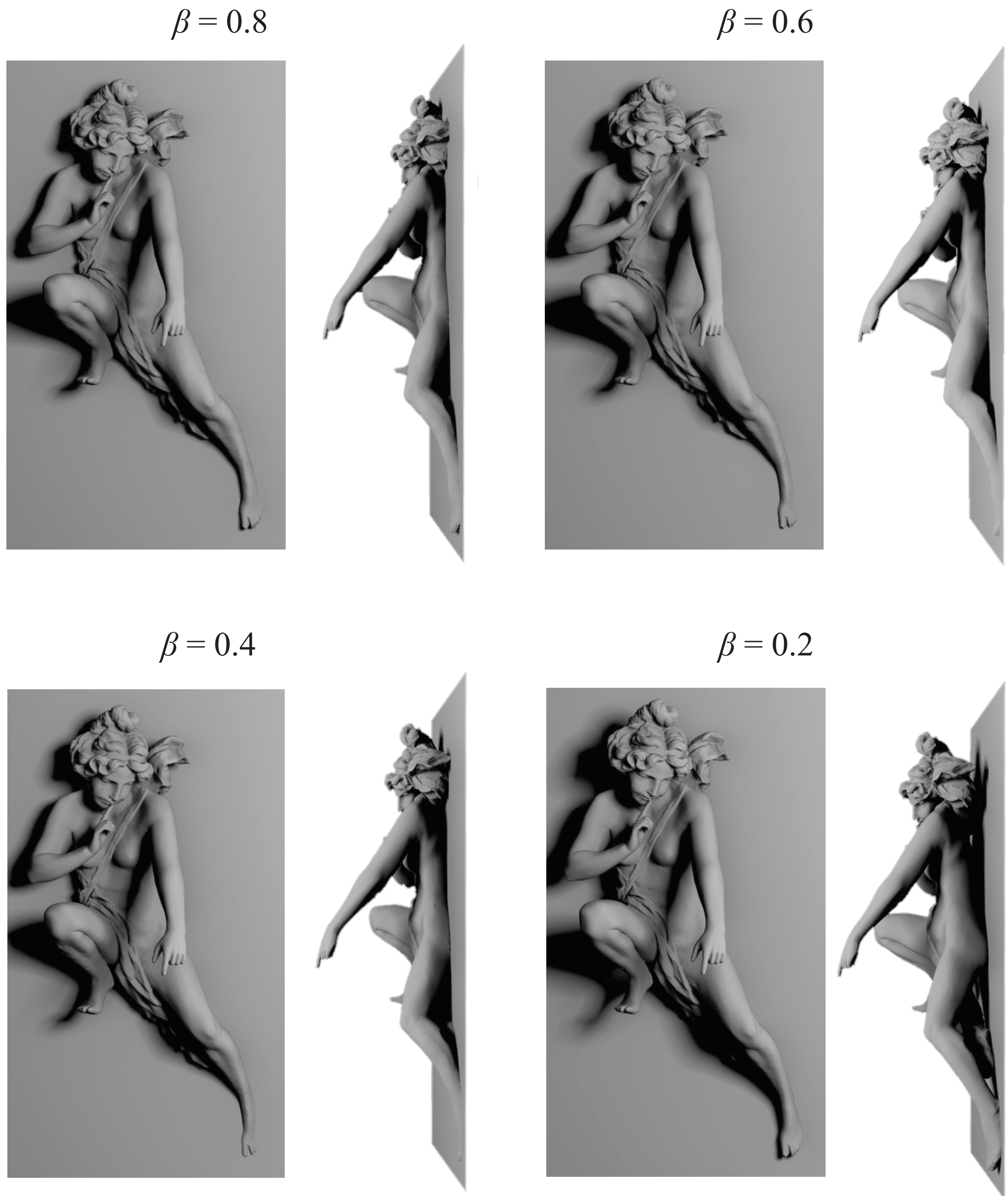
no compression

$\alpha = 1.0$

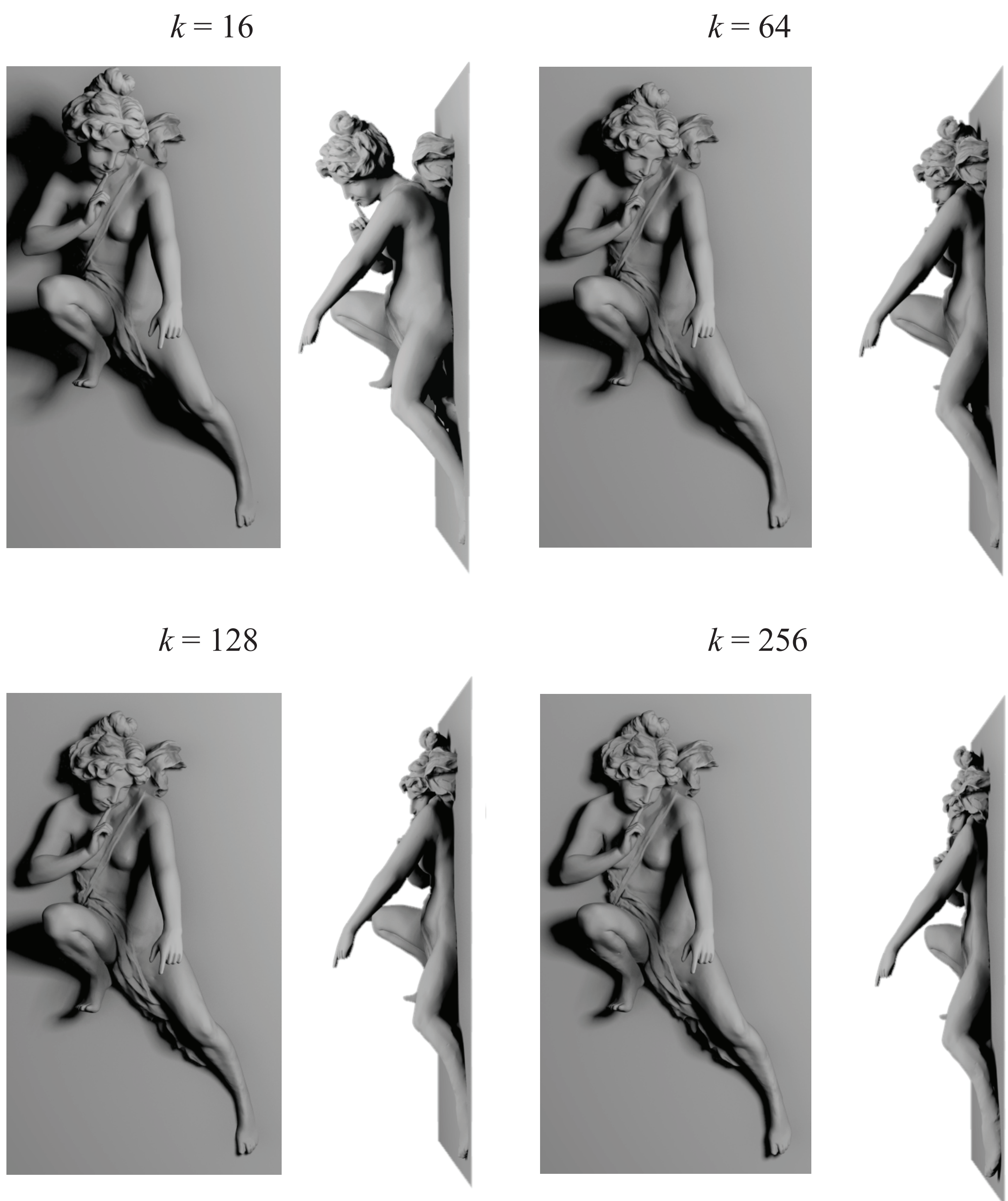
$\alpha = 0.8$

$\alpha = 0.5$

Changing attenuation factor β determines how much the scene sinks in the relief plane (k = 128, no compression).

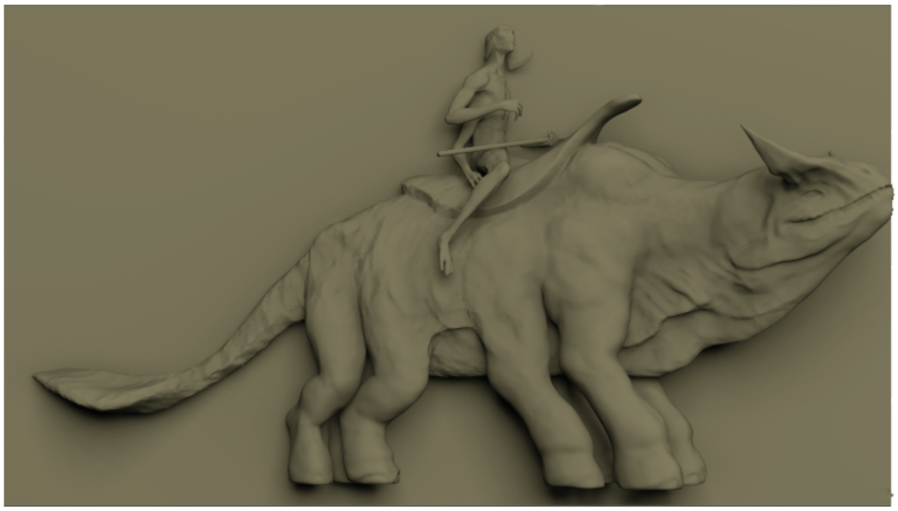


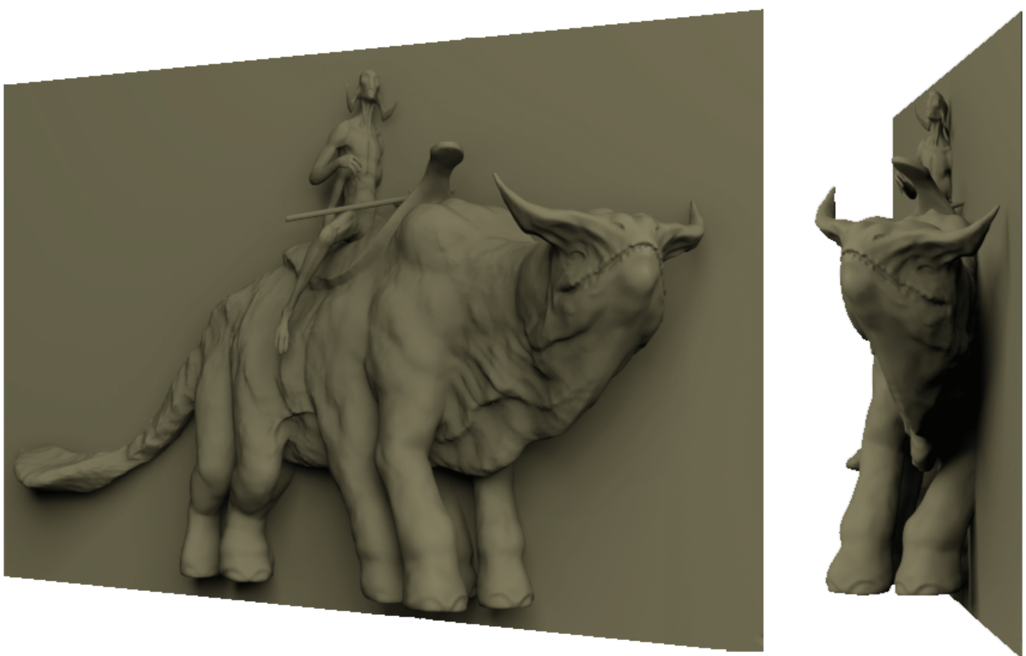
Increasing number k attenuation points increases the amount of scene elements that are brought towards the relief plane and adjusts the depth range ($\beta = 0.8$, no compression).



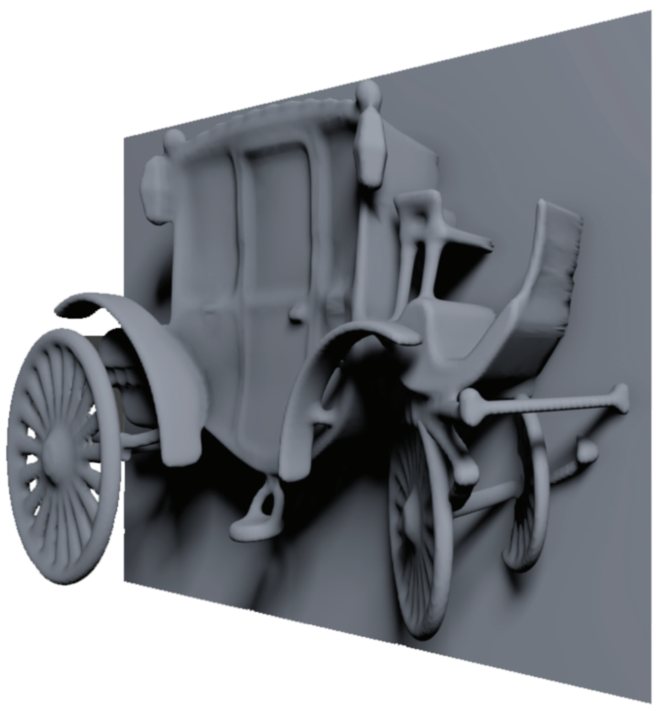
3 High reliefs from different type of scenes

$k = 96, \alpha = 1.0$

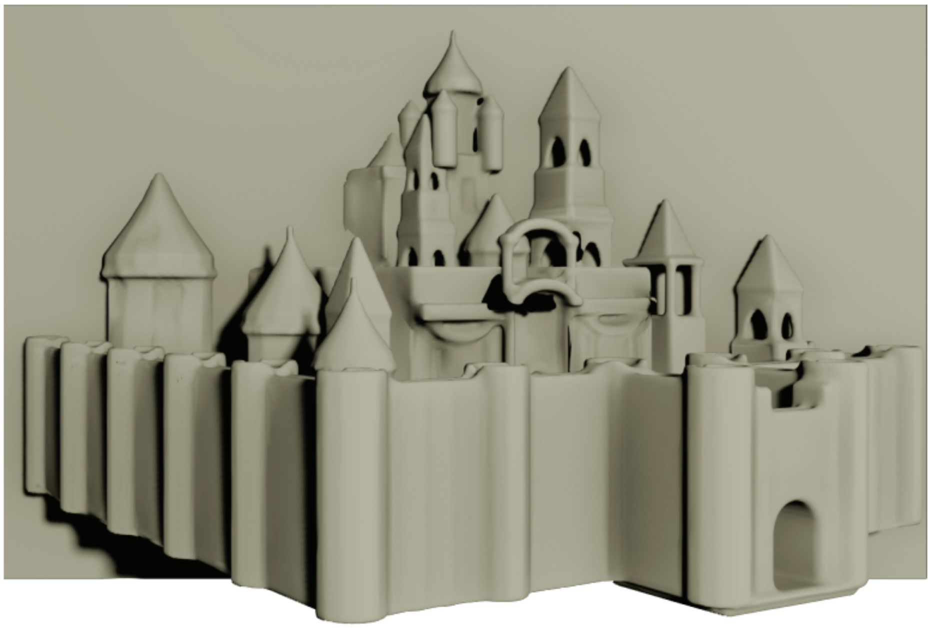


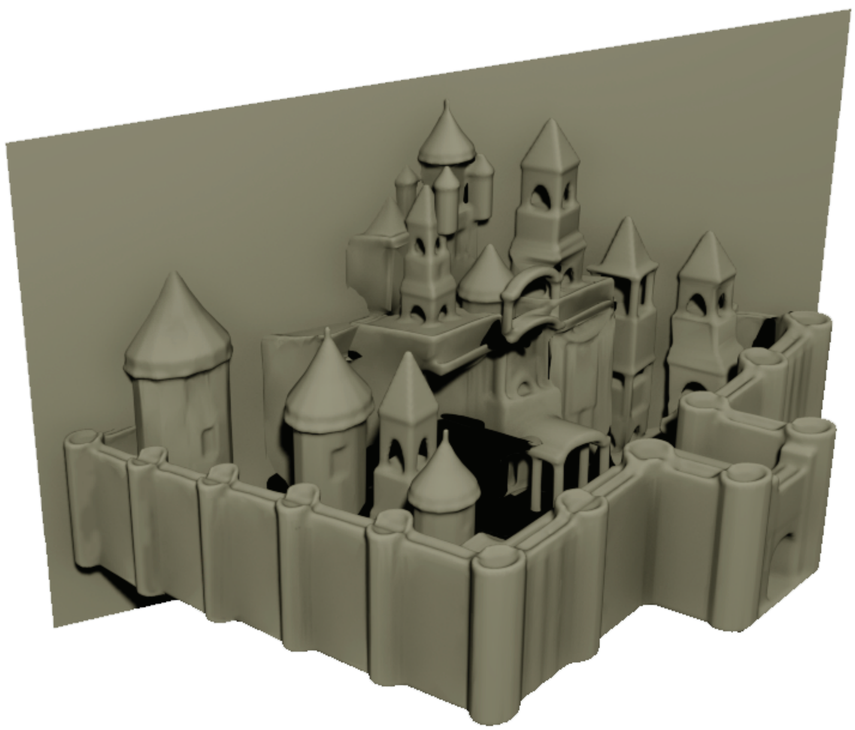


$k = 32, \alpha = 0.6$

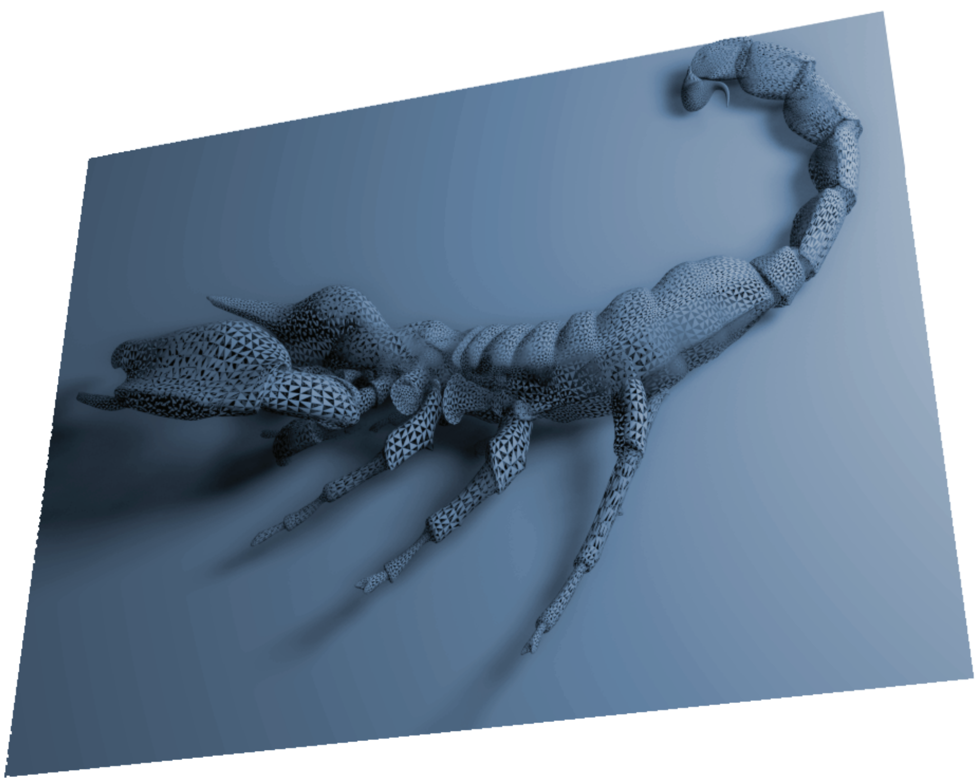


k = 128, α = 0.8





$k = 64, \alpha = 0.8$



$k = 32, \alpha = 0.8$