

ZP+: correct Z-pass stencil shadows

Supplemental material – illustrations

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The pictures in this file are in the PNG file-format. So that you can zoom on it without JPG annoyance.

1 Artifacts illustrated (Figure 1)

In Figure 1, the viewer faces a wall. A dragon model stands behind the viewer and casts a shadow on the wall.

The TOP-LEFT picture shows that the straightforward implementation of *ZP+* yields a few artifacts. The artifacts locations are circled in red on the bottom-left picture.

The TOP-RIGHT picture shows that all artifacts are removed as explained in the paper.

The BOTTOM-LEFT picture give hints on the location of the artifacts.

To make more artifacts visible on the top-left picture, we had to have a complex near-cap rasterized in the stencil buffer. To do so, we put the camera's near-plane as far as possible without culling the wall away. This results in the whole dragon's shape being "visible" in the stencil buffer.

The BOTTOM-RIGHT picture shows the near-cap (in green) and the extruded quads (in blue). The quads are hardly visible because their visible part lies between the near-plane and the wall, which are close together. You can verify that the artifacts of the top-left picture lie on the boundary of the near-cap. This may be more easily seen with an image viewer and the separate image files, included as supplemental material.

2 The near-cap illustrated (Figure 2)

Figure 2 gives additional views of the near-cap. In these two cases (each row of the figure), the camera's near-plane clips a hand-skeleton model. The light is positionned to the left and on the same side of the near-plane as the camera.

The extruded quads are not shown in this figure.

On the first row, the light source is moderately away from the near-plane, so that the clipped geometry (projected onto the near-plane to form the near-cap) is fully visible (green).

On the bottom row, the camera's near-plane is moved away from the camera. Thus, most of the hand is clipped. The camera has been rotated a little so that the light source is closer to the near-plane than in the top row.

This implies that the light-frustum is very skewed: only a small section of the fingers lie in and cross the light-frustum. Hence the elongated bands appearing in the near-cap (green).

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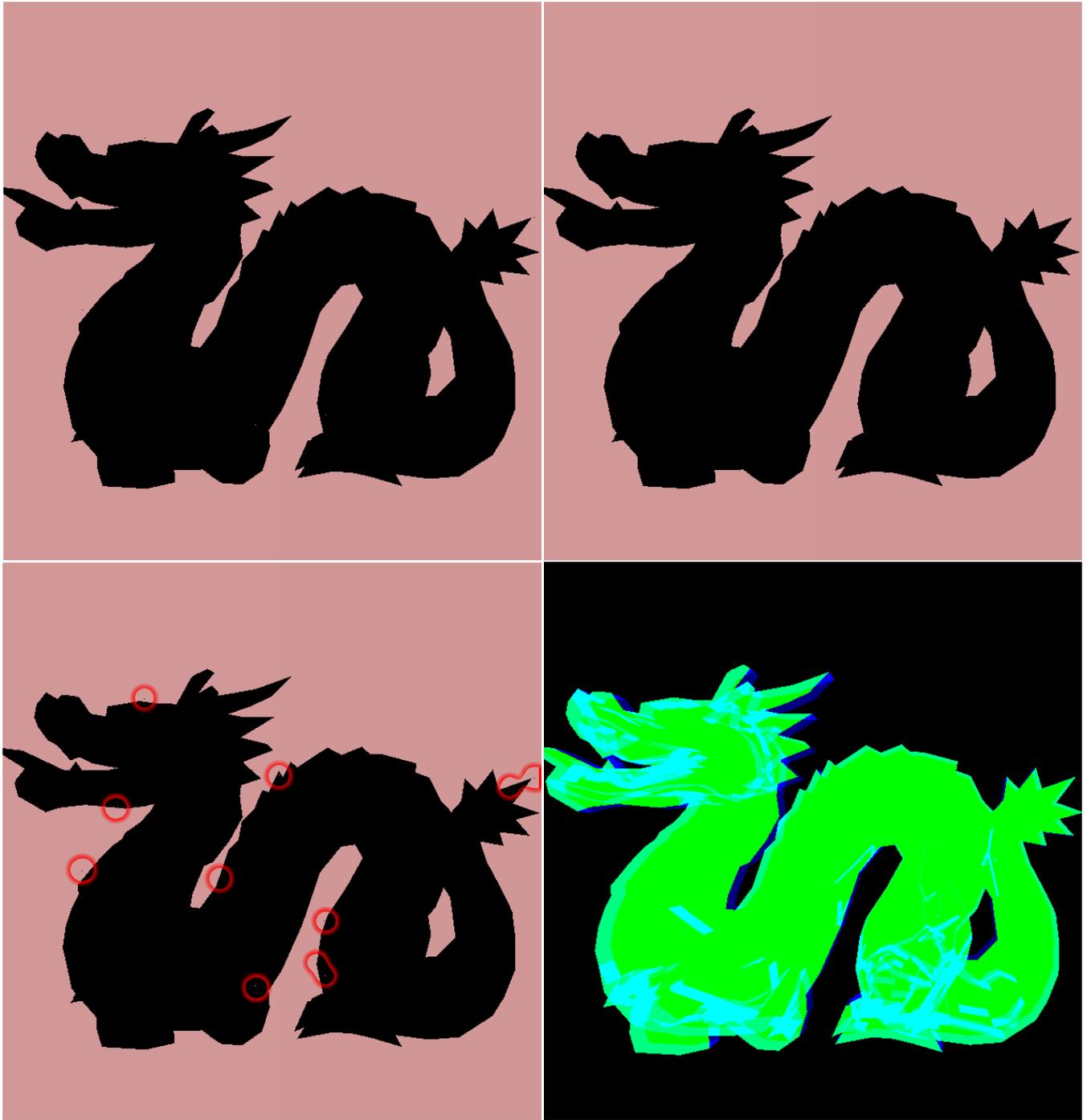


Figure 1: Showing how the artifacts look like, and where they appear.

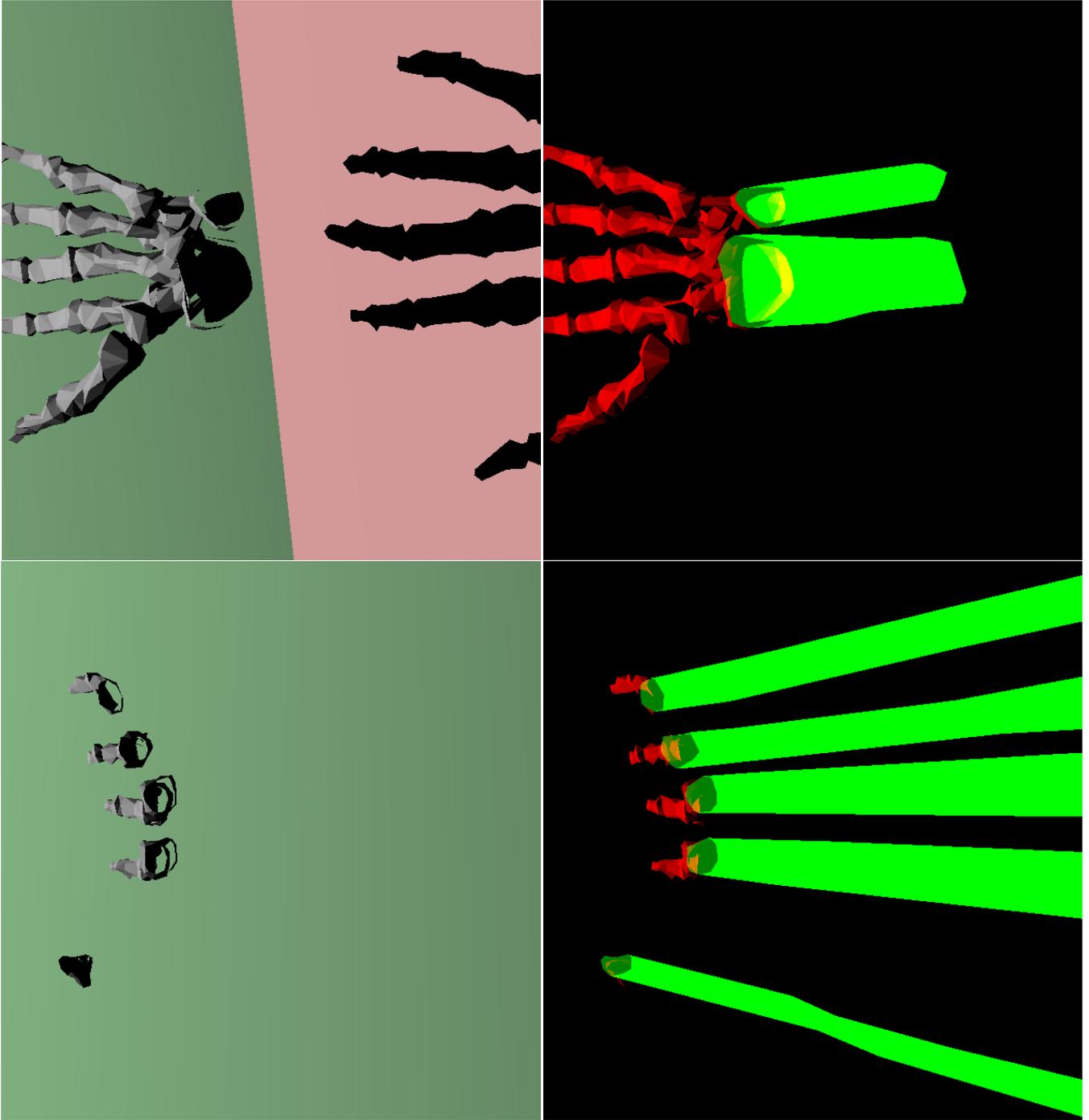


Figure 2: Showing the near-cap.