Intrinsic Images by Clustering

Supplementary material

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Figures 1 – 9. *(From left to right)* First column, input image and scatter plot of pixel data in the (a,b) plane (Lab color space). Second column, k-means segmentation according to (a,b) pixel coordinates; third column, final clustering yielded by our method taking into account spatial information (both, second and third rows, are depicted in false color). Last columns, the resulting shading and reflectance intrinsic images.

Figures 10. Our intrinsic shading and reflectance for an image inspired by Dong et al. 2011. Our technique can also be used in conjunction with others, such as the image-based material modeling technique recently presented by Dong et al. 2011

Figures 11 – 15. Comparison with the state of the art methods in intrinsic image decomposition.

Figures 16 – 17. Intrinsic images for the MIT dataset. First column, input image. Second and third columns, ground truth shading and reflectance. Last columns, our resulting shading and reflectance. The gamma of the images has been corrected for visualization purposes.

Figure 18. A challenging case for our algorithm. First and second rows (*deer* and *squirrel*), from left to right: input images and our intrinsic shading and reflectance. Notice the shadow close to the tail in the reflectance image of the *squirrel*. Bottom row: Comparison of scatter plots. From left to right: *deer, squirrel, St. Basil* and *raccoon*. Notice the lack of chrominance variation in squirrel and *deer*, compared to the other two plots.

Figure 1: *Lollipop (original image by Thalita Carvalho, flickr.com)*

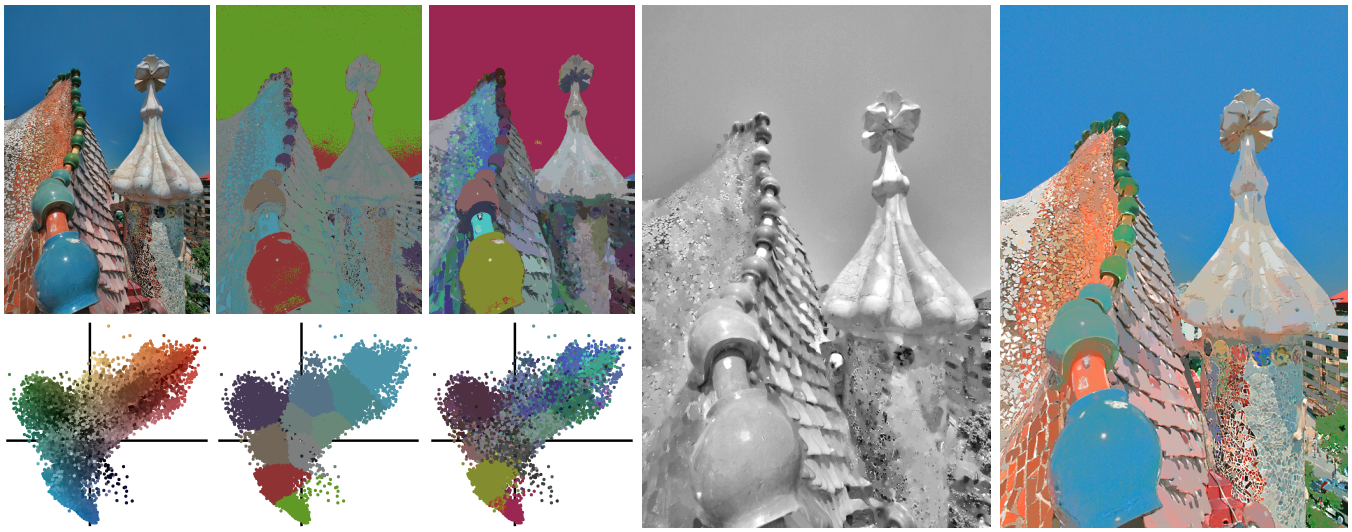


Figure 2: *Batlló house (original image by lukasz dzierzanowski, flickr.com)*

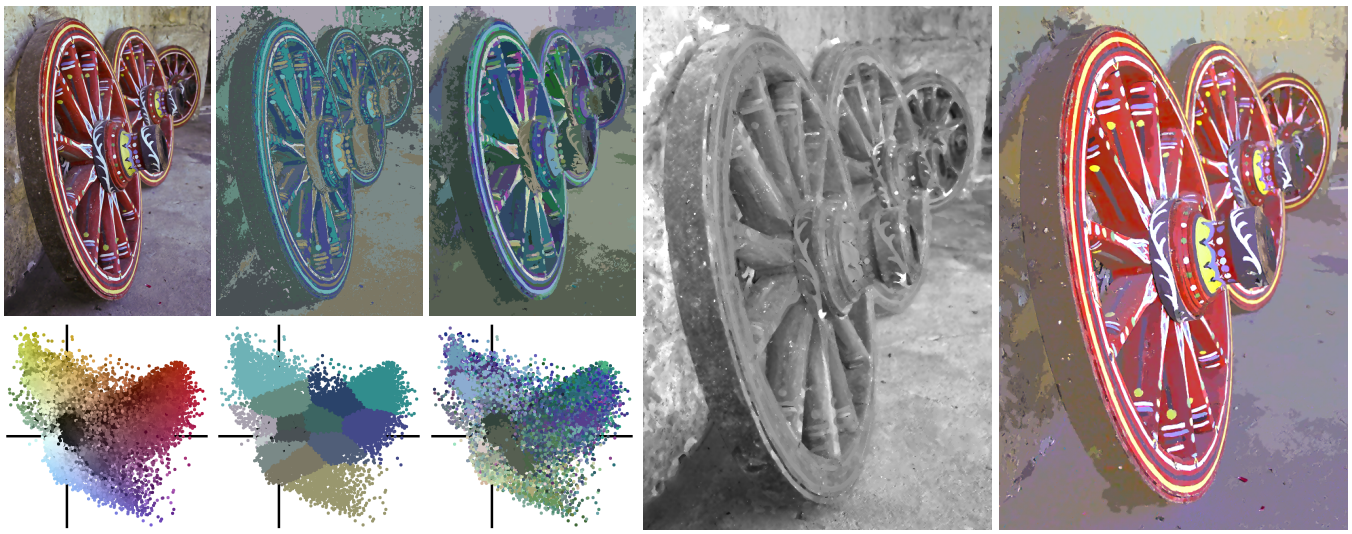


Figure 3: *Wheels (original image by Angela Smith Kirkman)*

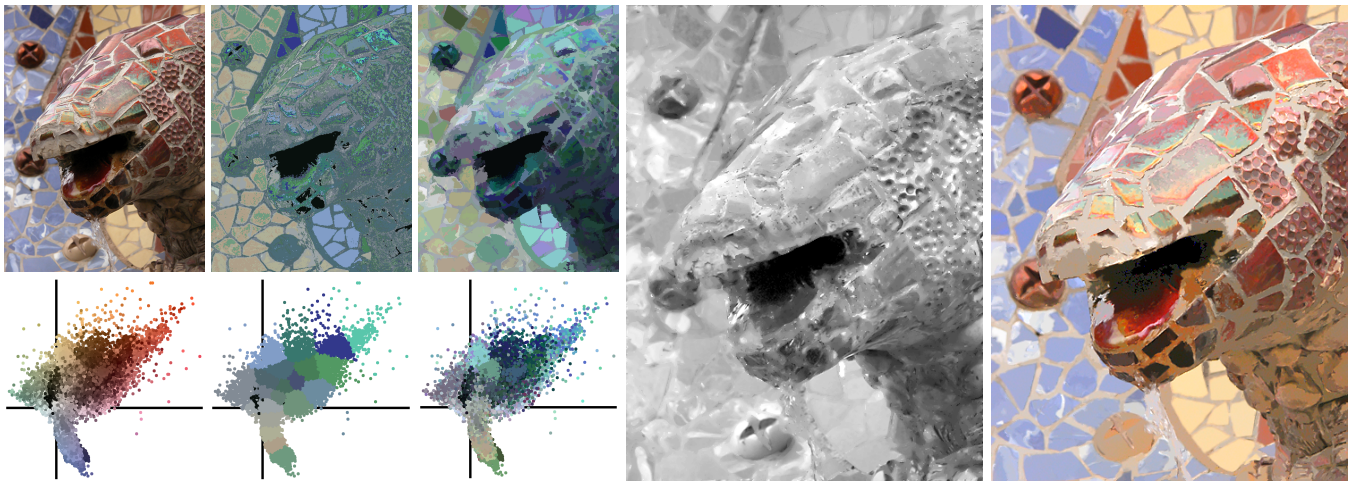


Figure 4: *Dragon (original image by Jordanhill School D&T Dept, flickr.com)*

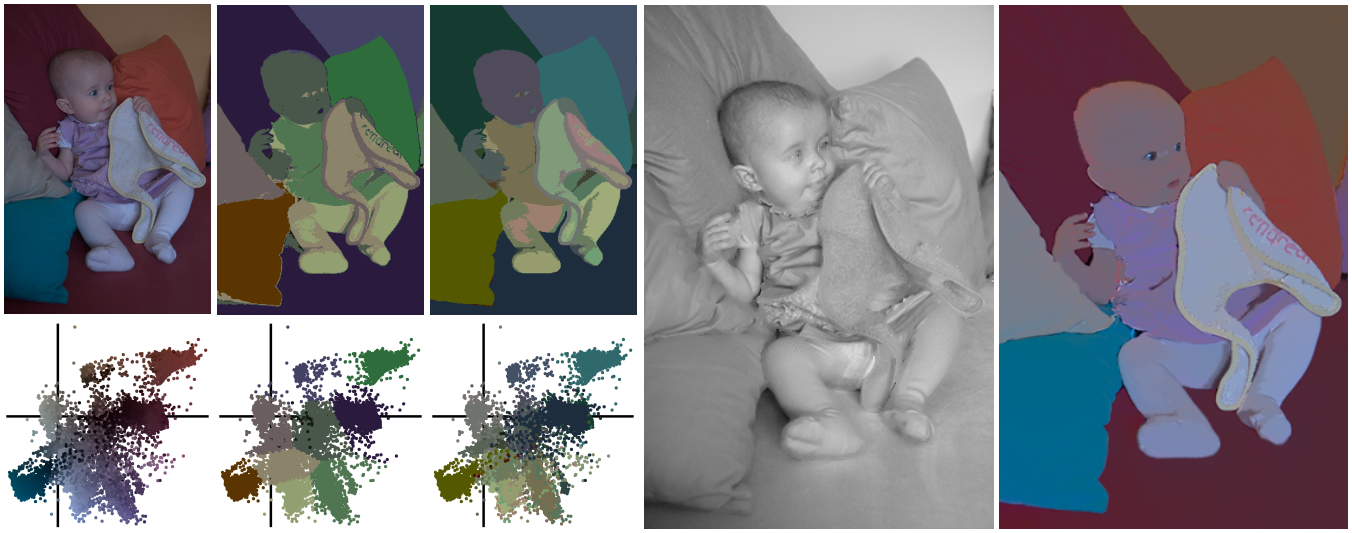


Figure 5: *Baby*

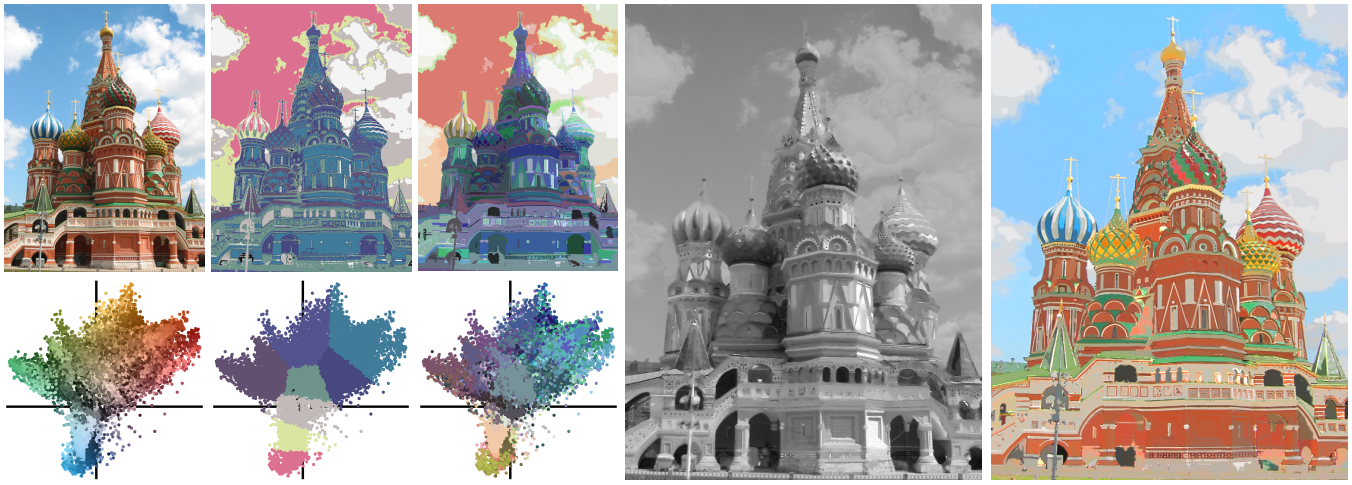


Figure 6: *St. Basil (original image by Captain Chaos, flickr.com)*

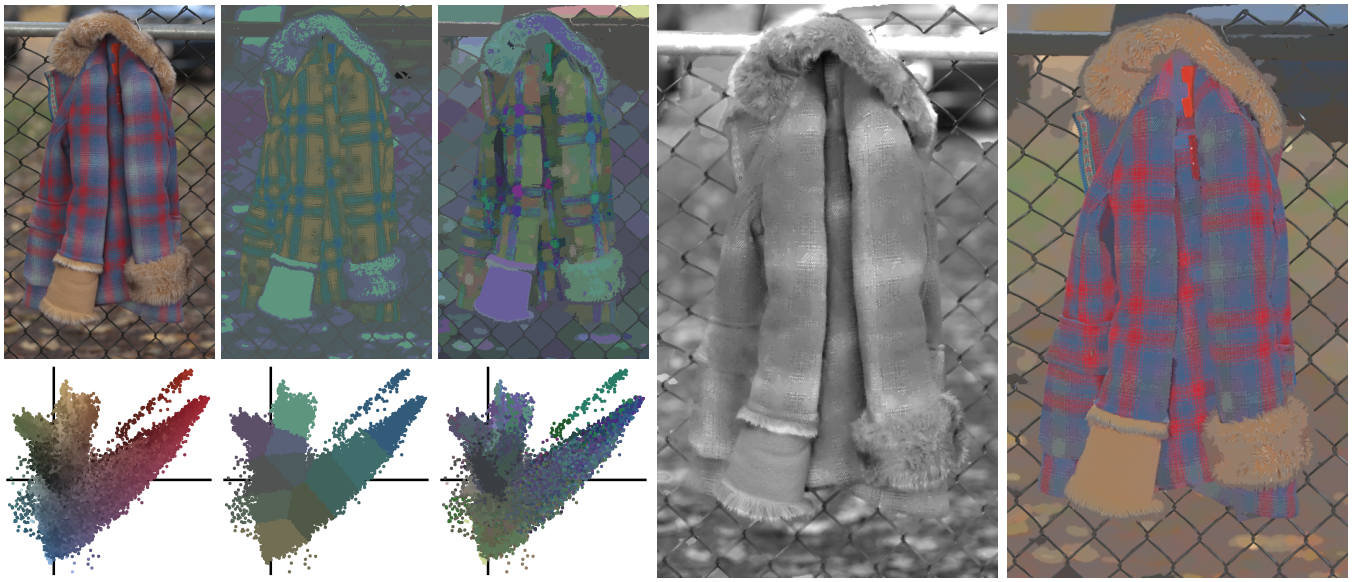


Figure 7: *Coat*

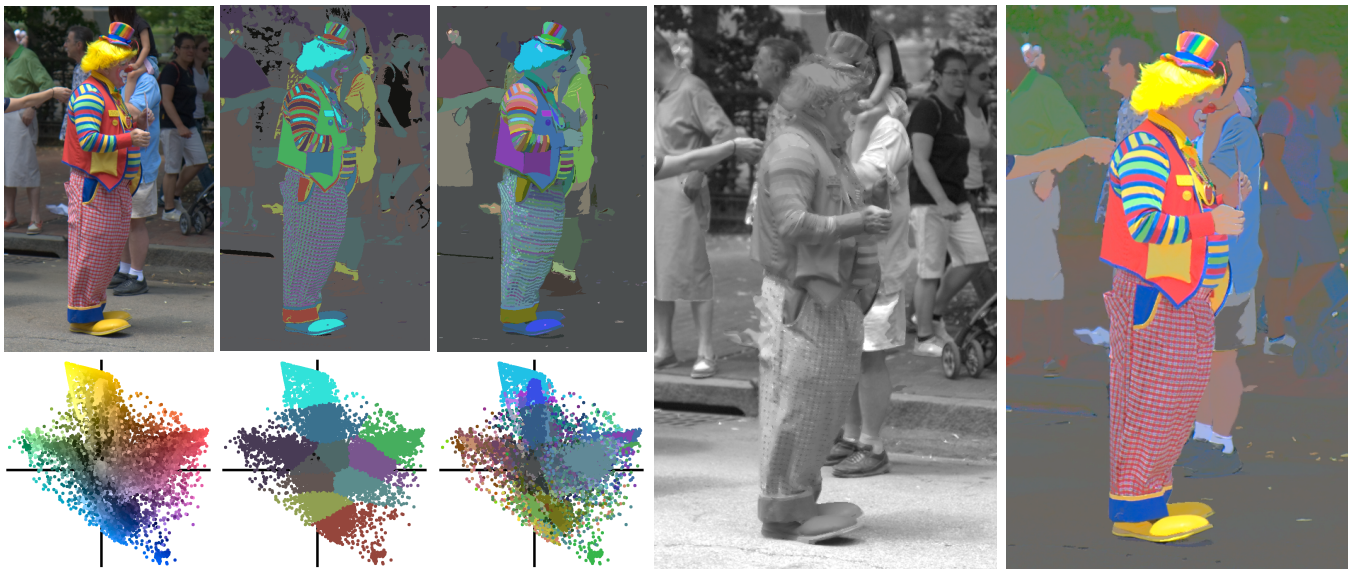


Figure 8: *Clown*

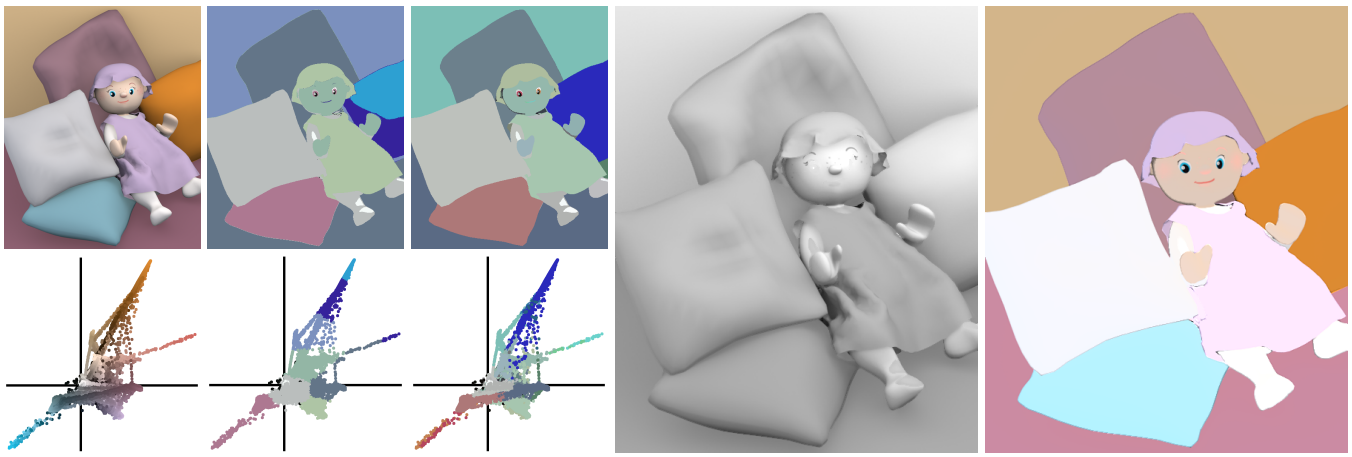
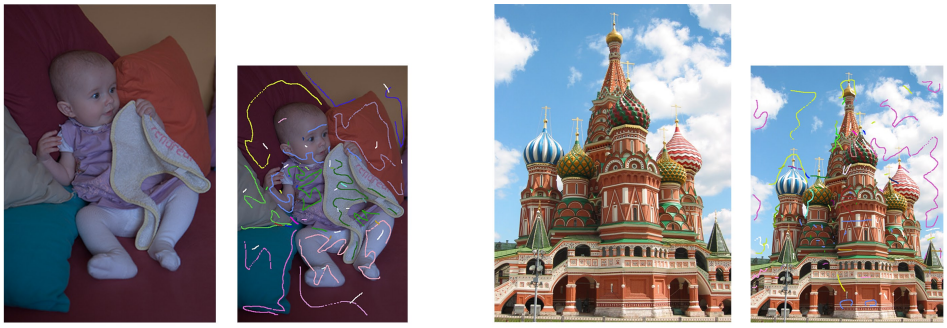


Figure 9: *Synthetic*

Figure 10: *Left: Input texture image. Middle: Our intrinsic reflectance. Right: Our intrinsic shading. Image inspired by [**?**].*



Input image (*baby*) | *User strokes* [Bousseau et al. 2009] | Input image (*Moscow*) | *User strokes* [Bousseau et al. 2009]

[Tappen et al. 2005] | [Shen et al. 2008] | [Bousseau et al. 2009] (58 strokes) | [Shen and Yeo 2011] | [Shen et al. 2011] (auto) | [Gehler et al. 2011] | **Our work**

[Tappen et al. 2005] | [Shen et al. 2008] | [Bousseau et al. 2009] (81 strokes) | [Shen and Yeo 2011] | [Shen et al. 2011] (auto) | [Gehler et al. 2011] | **Our work**

Figure 11: *Baby and St. Basil (original image by Captain Chaos, flickr.com)*

Input image (*clown*)

User strokes
[Bousseau et al. 2009]

[Tappen et al. 2005]

[Shen et al. 2008]

[Bousseau et al. 2009]
(33 strokes)

[Shen et al. 2011]
(auto)

Our work

Figure 12

Input image (*coat*)

User strokes
[Bousseau et al. 2009]

[Tappen et al. 2005]

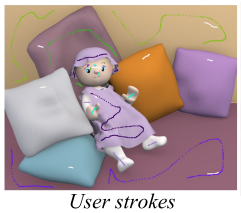
[Bousseau et al. 2009]
(31 strokes)

[Shen et al. 2011]
(auto)

Our work

Figure 13

Input image (*synthetic*)



User strokes
[Bousseau et al. 2009]

Ground truth

[Tappen et al. 2005]

[Bousseau et al. 2009]
(35 strokes)

[Shen and Yeo 2011]

[Shen et al. 2011]
(unknown strokes)

[Gehler et al. 2011]

Our work

Figure 14

Input image (doll)

User strokes
[Bousseau et al. 2009]

Our matt generation

[Weiss et al. 2001]

[Tappen et al. 2005]

[Shen et al. 2008]

[Bousseau et al. 2009]
(41 strokes)

[Shen et al. 2011]
(unknown strokes)

[Shen et al. 2011]
(auto)

Our work

Our work with matte

Figure 15

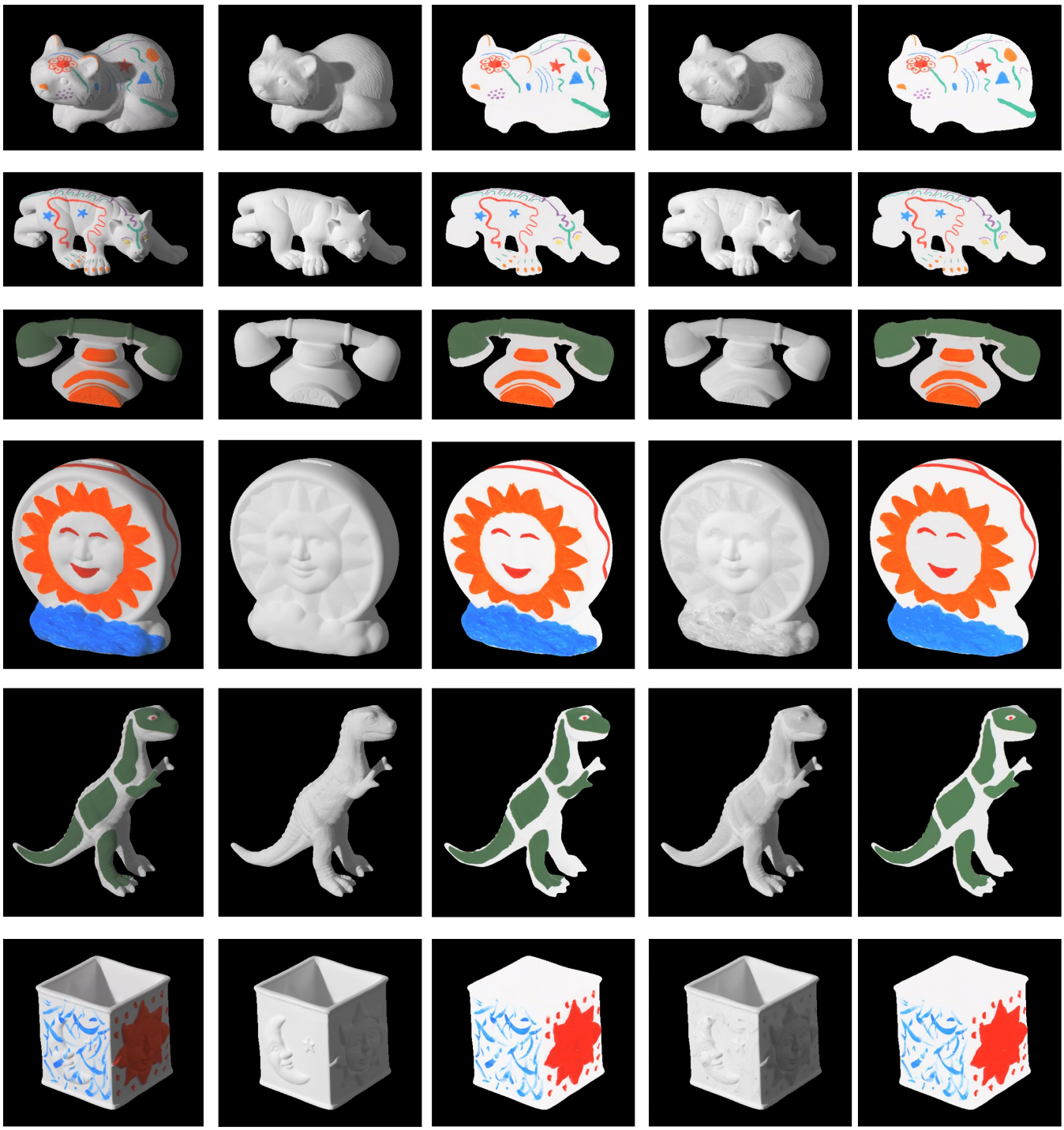


Figure 16

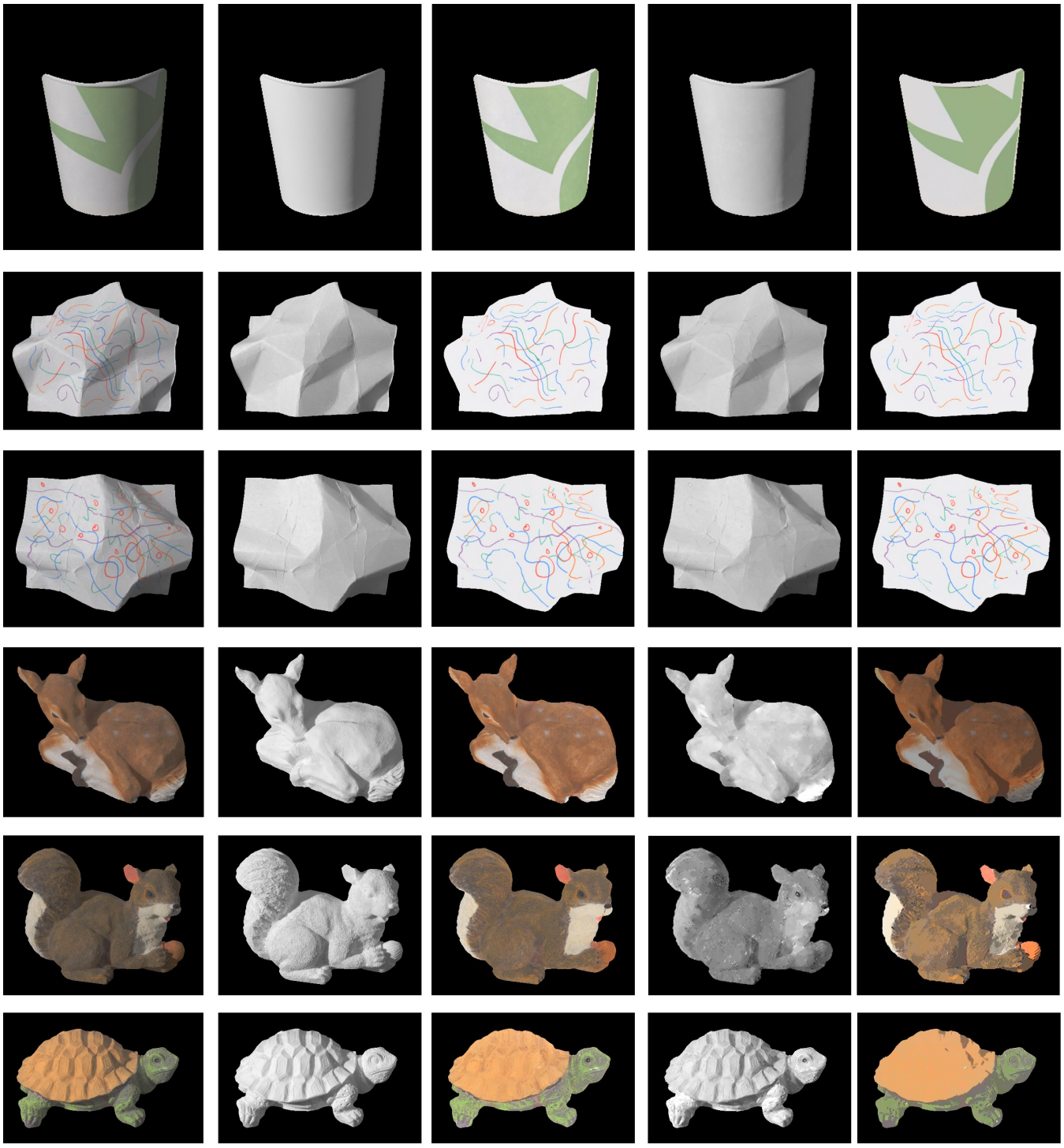


Figure 17

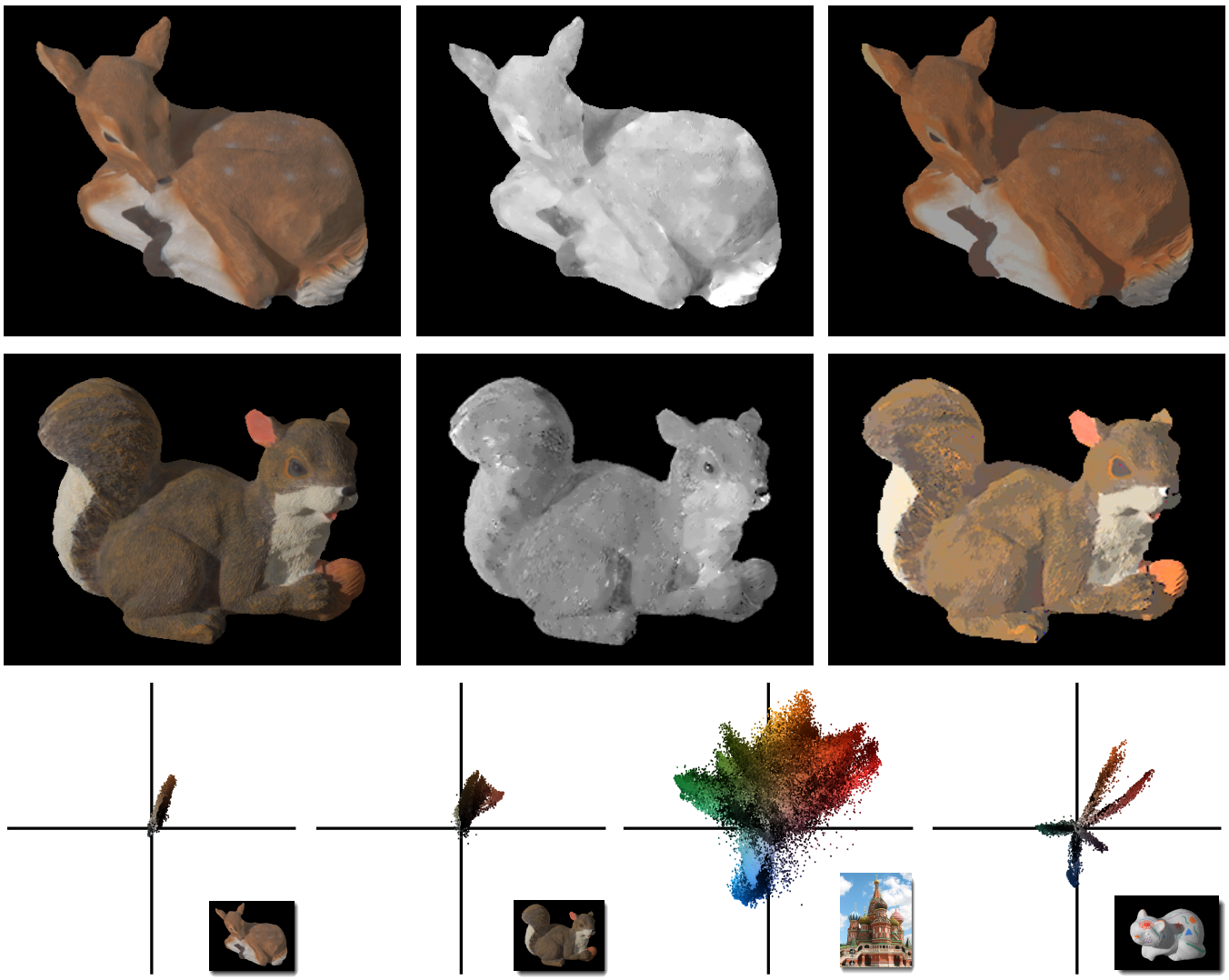


Figure 18: *A challenging case for our algorithm*