Eurographics Symposium on Rendering 2018
T. Hachisuka and W. Jakob
(Guest Editors)

Volume 37 (2018), Number 4

Approximate svBRDF Estimation From Mobile Phone Video SUPPLEMENTAL MATERIAL

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This document contains results for additional materials not included in the main document. Figure 1 shows a depiction of the capture setup for one and two cameras, as described in section 3.1 of the paper. Figure 2 shows comparisons to ground truth using a very oblique light position that was not included in the input data for fitting the svBRDF (see section 4 of the paper).

The remaining figures show the svBRDF output layers also described in section 4. The leftmost column is the average color as described in section 3.2.1. The remaining columns are the diffuse color (ρ_d), the specular color (ρ_s), the roughness parameter in the X direction (α_x), the roughness parameter in the Y direction (α_y), and the normal offset map. Figure 3 includes the six additional materials captured with only one camera. Figures 4 and 5 each include four materials as captured with either one or two cameras, respectively, for comparison.

The corkboard and shiny tile materials illustrate failures for our method caused by over-fitting. In the case of the corkboard material, sloping of the overall surface normal at the top of the sample incorrectly bleeds into both the specular and roughness parameters. Although the resulting material can still be rendered with reasonable results, some applications such as selective editing of individual layers of the svBRDF would not be possible. In the shiny tile material the locations of the flash (dark circles) are segmented out into their own sub-clusters and fit with a darker specular value to offset the intense flash brightness. The manifestation of this is more severe, as specular highlights are only apparent at the locations they were originally observed. The shiny white tile was the only material for which we observed this behavior, and we speculate that it may be partly caused by a much darker auto-exposure setting on the camera that was incompatible with our estimated flash radiance value.

Two supplemental videos are also included. The first video shows each of the captured materials textured onto a teapot model under animated illumination. The video also includes a side-by-side comparison for materials captured with two cameras. The second video shows an animation of the input video frames from a single camera side by side with a rendering of the fitted svBRDF output using identical input light and camera locations.

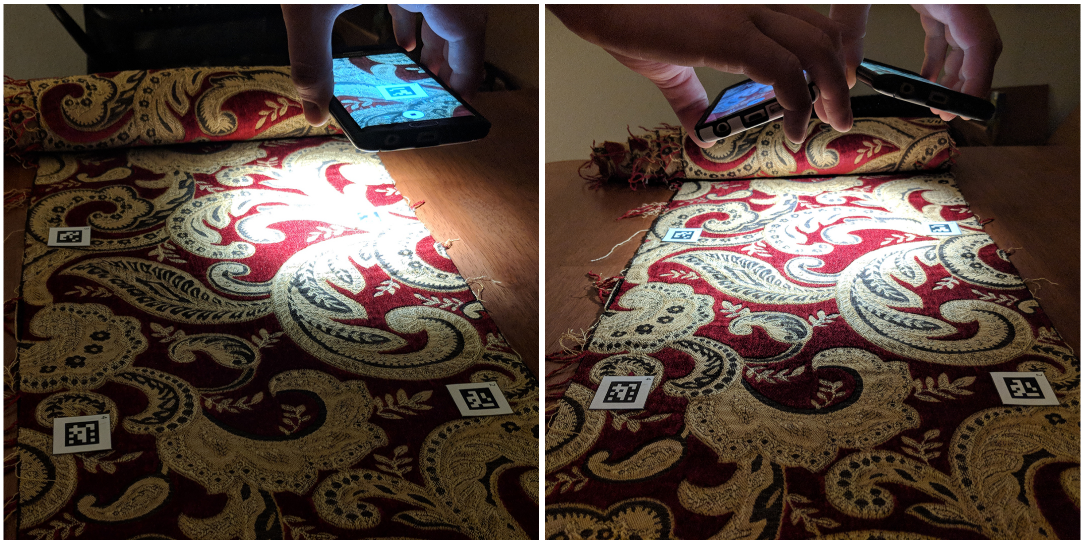

Figure 1: Example images showing the capture setup for one and two cameras.

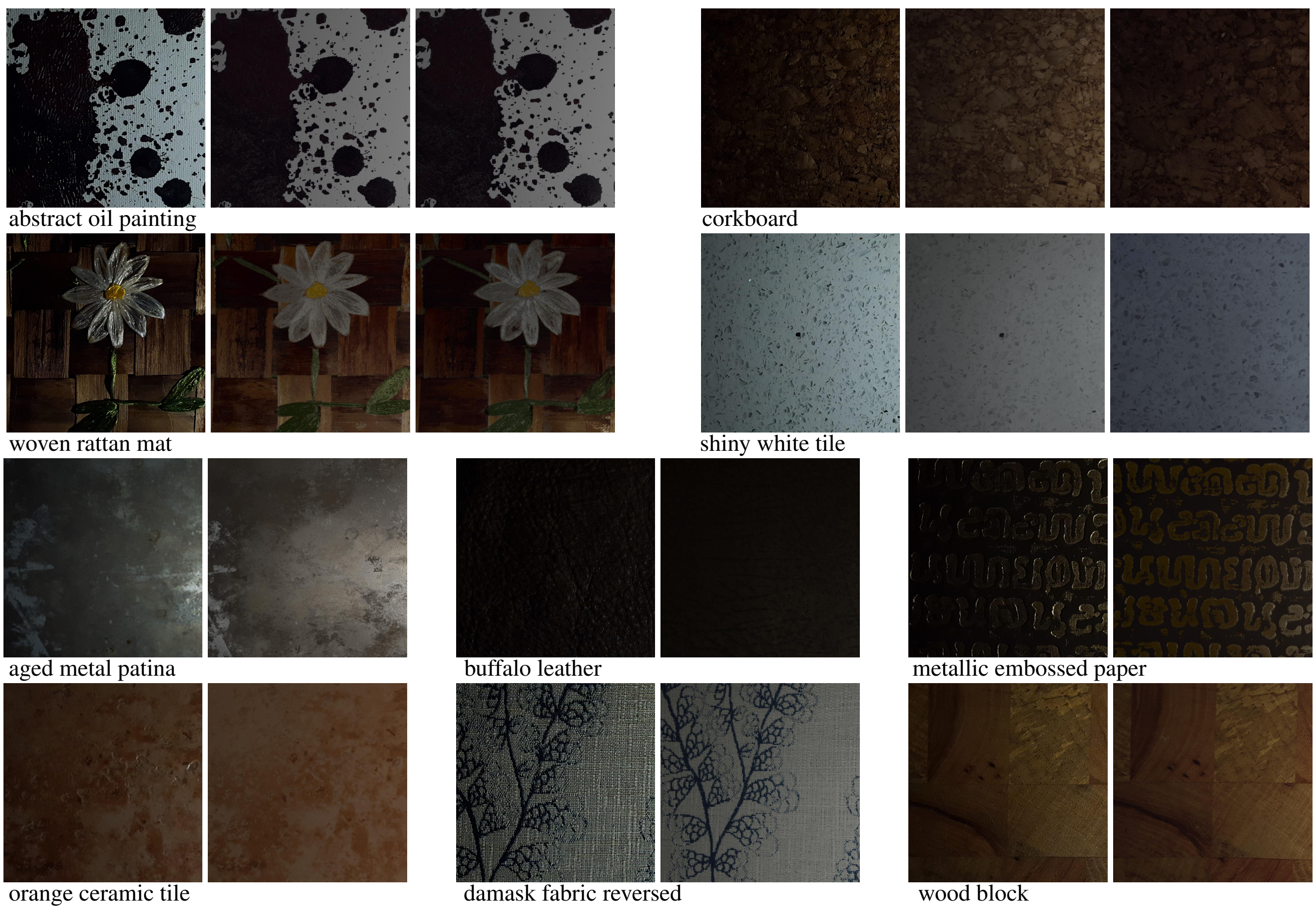

Figure 2: Comparison to a ground truth photo with an oblique light angle not included in the input fitting data. For each material shown, the first image is the ground truth and the second image is a rendering with the same light pose as the ground truth using the data captured with **one camera**. The first two rows also include a third image showing the same rendering using the data captured with **two cameras**. Images have been cropped square and resized to fit.

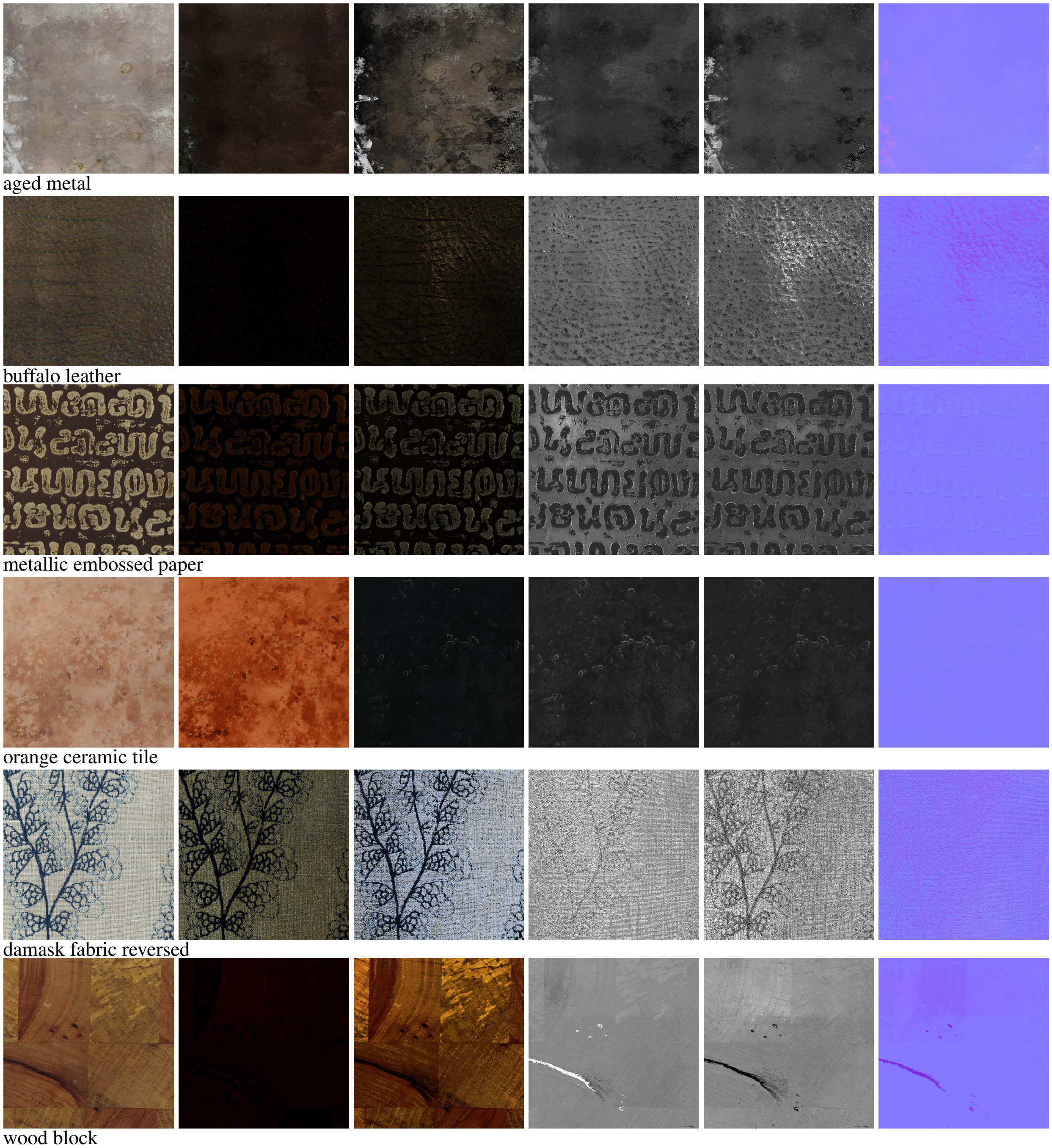

Figure 3: A sample of the results for seven materials captured with **one camera**. Each row, from left to right: average color, ρ_d, ρ_s, α_x, α_y, and the normal offset map. Images have been cropped square and resized to fit.

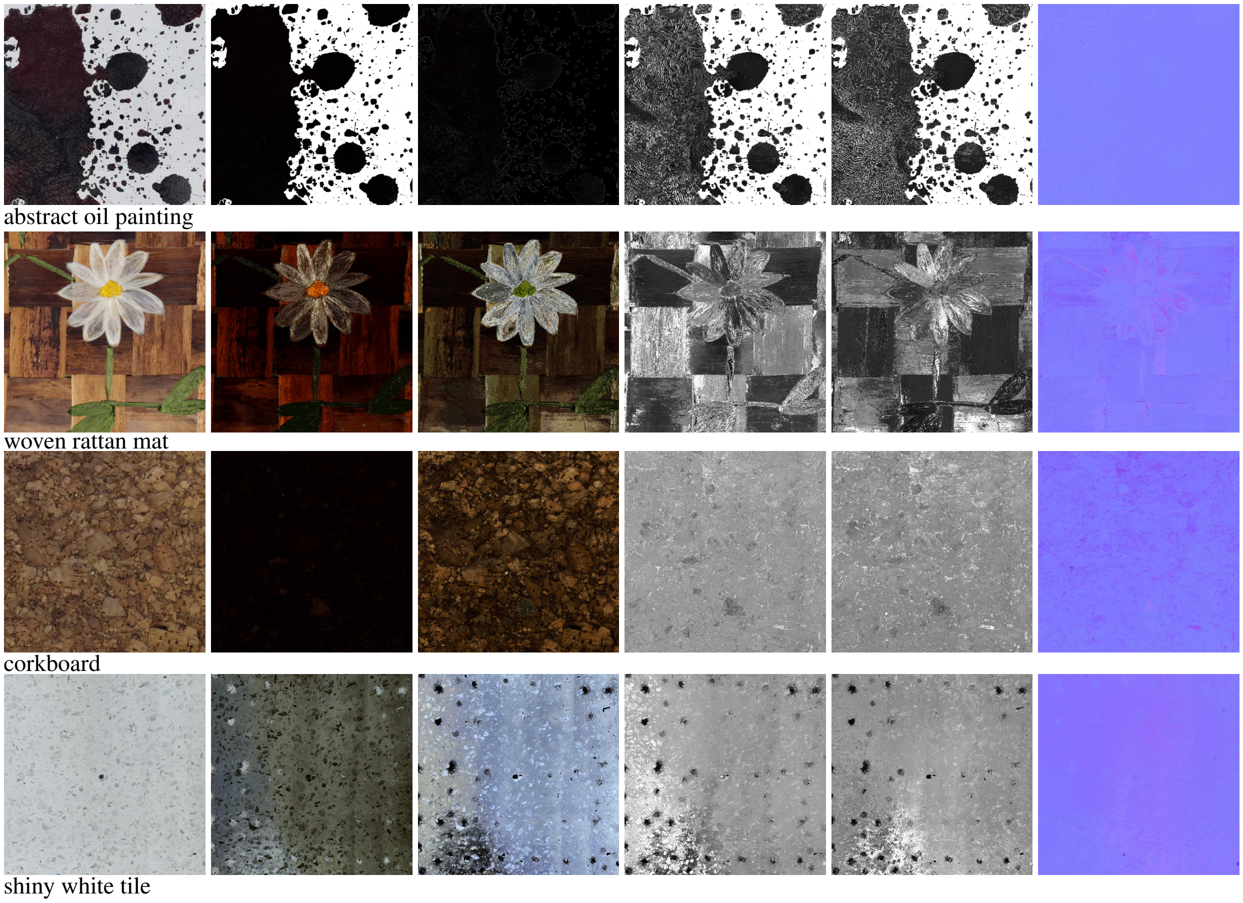

Figure 4: A sample of the results for seven materials captured with **one camera**. The examples in this figure may be compared with the two camera version of the same materials in figure 5. Each row, from left to right: average color, ρ_d, ρ_s, α_x, α_y, and the normal offset map. Images have been cropped square and resized to fit.

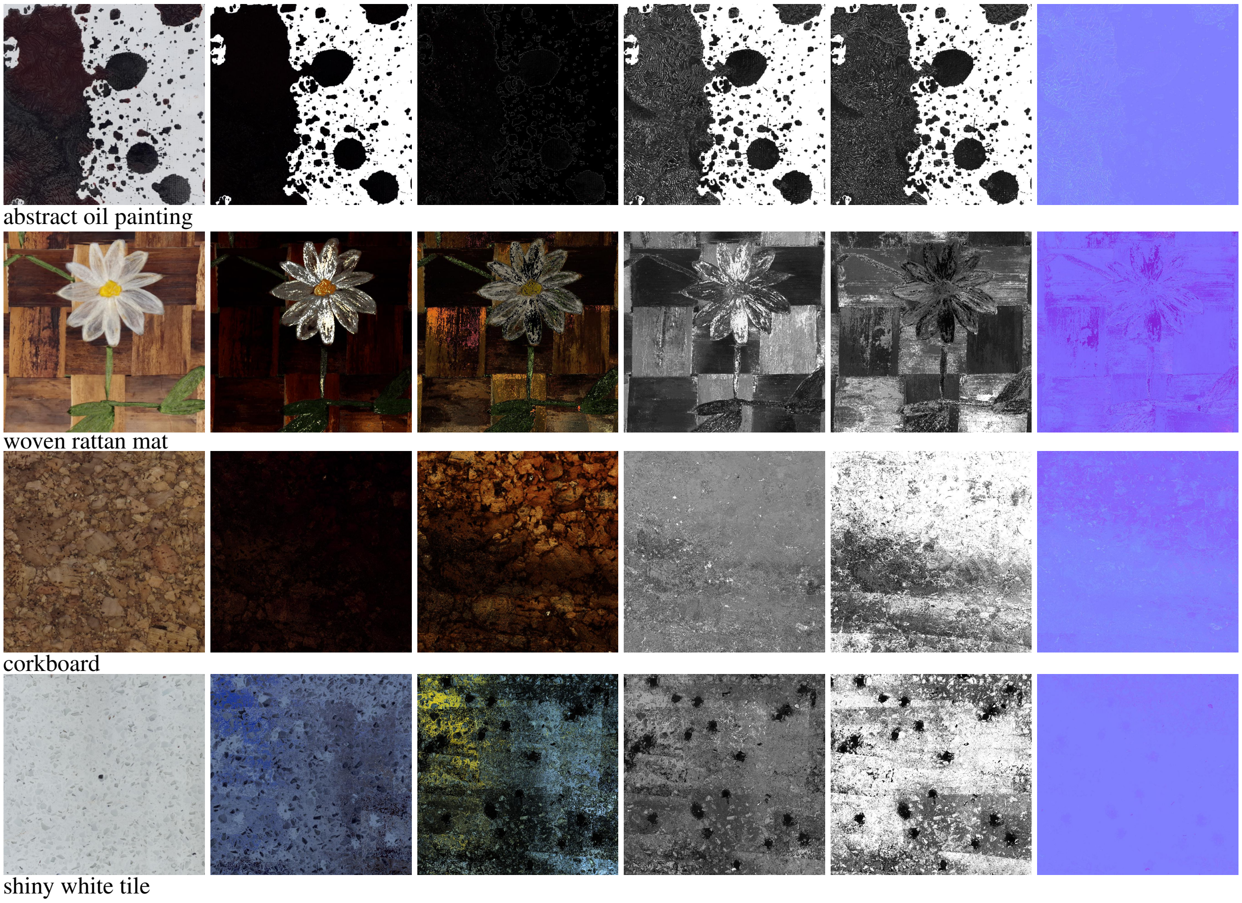

Figure 5: A sample of the results for seven materials captured with **two cameras**. The examples in this figure may be compared with the one camera version of the same materials in figure 4. Each row, from left to right: average color, ρ_d, ρ_s, α_x, α_y, and the normal offset map. Images have been cropped square and resized to fit.