

Evaluation of Low-Level Image Representations for Illumination-Insensitive Recognition of Textureless Objects -*Supplementary Material*

Sebastian Zambanini and Martin Kampel

Computer Vision Lab, Vienna University of Technology, Austria

The figures on the following pages show all coin models used for the creation of the synthetic datasets (Figure 1) as well as complete series of renderings with varying illumination directions for all combinations of specularity and texturedness (Figures 2-13).

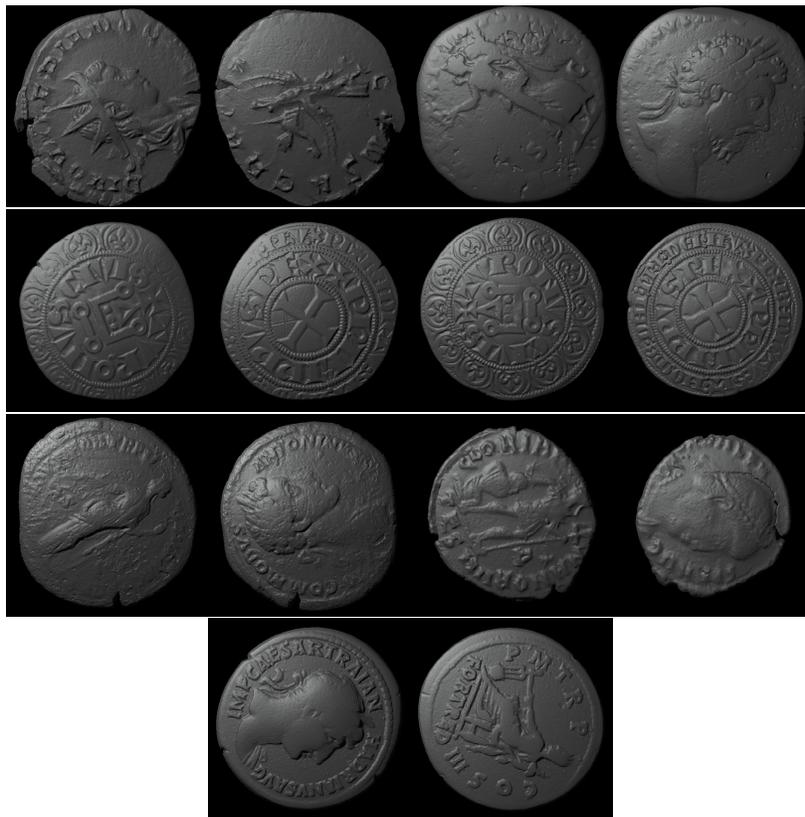


Fig. 1: All 14 coin models used for creating of the synthetic datasets. For this figure, all models were rendered without texture, a specular intensity of 0.25, light azimuth angle $\psi = 135^\circ$ and elevation angle $\lambda = 50^\circ$.

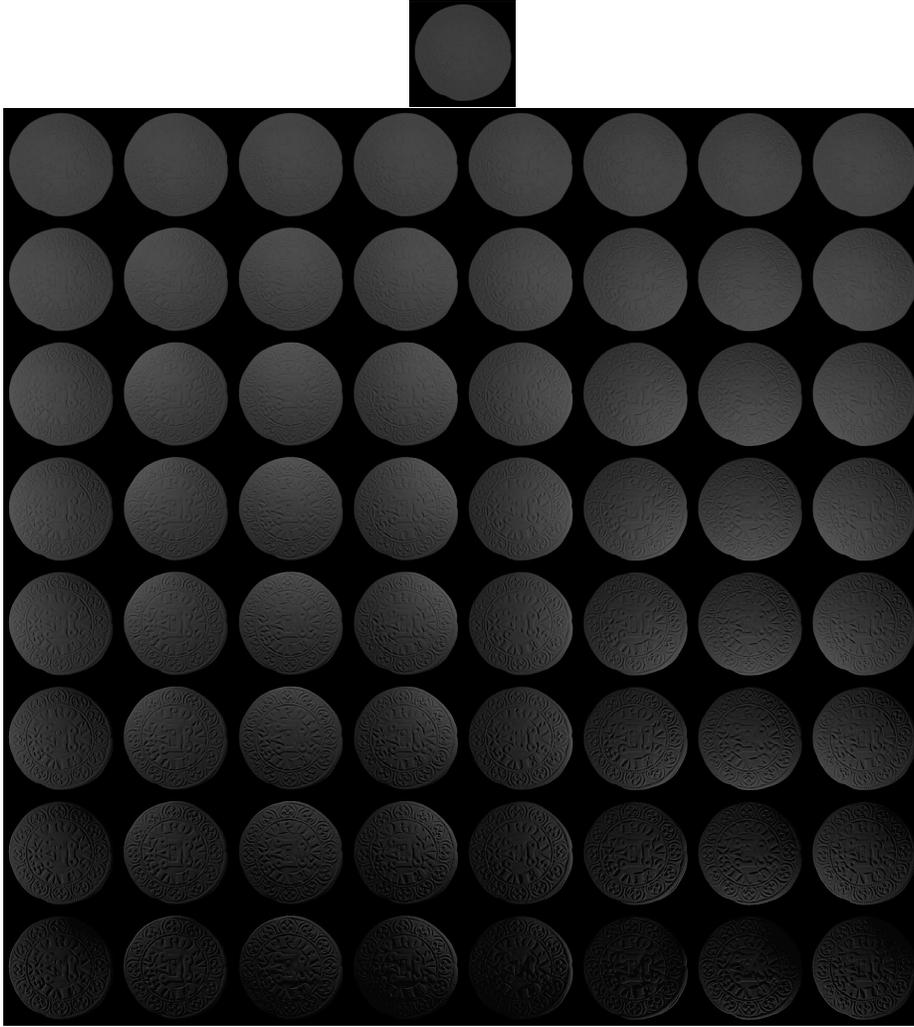


Fig. 2: All 65 images of an object rendered **without texture** and **specular intensity of 0.00**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

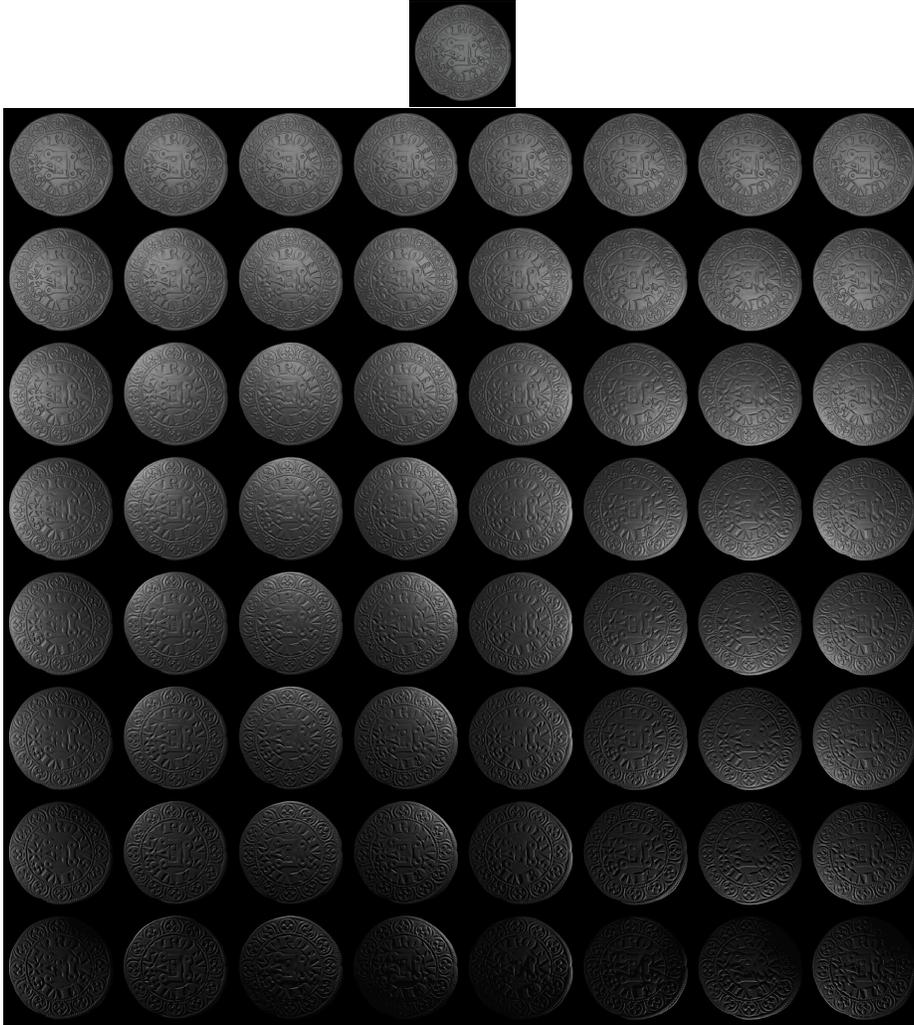


Fig. 3: All 65 images of an object rendered **without texture** and **specular intensity of 0.25**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

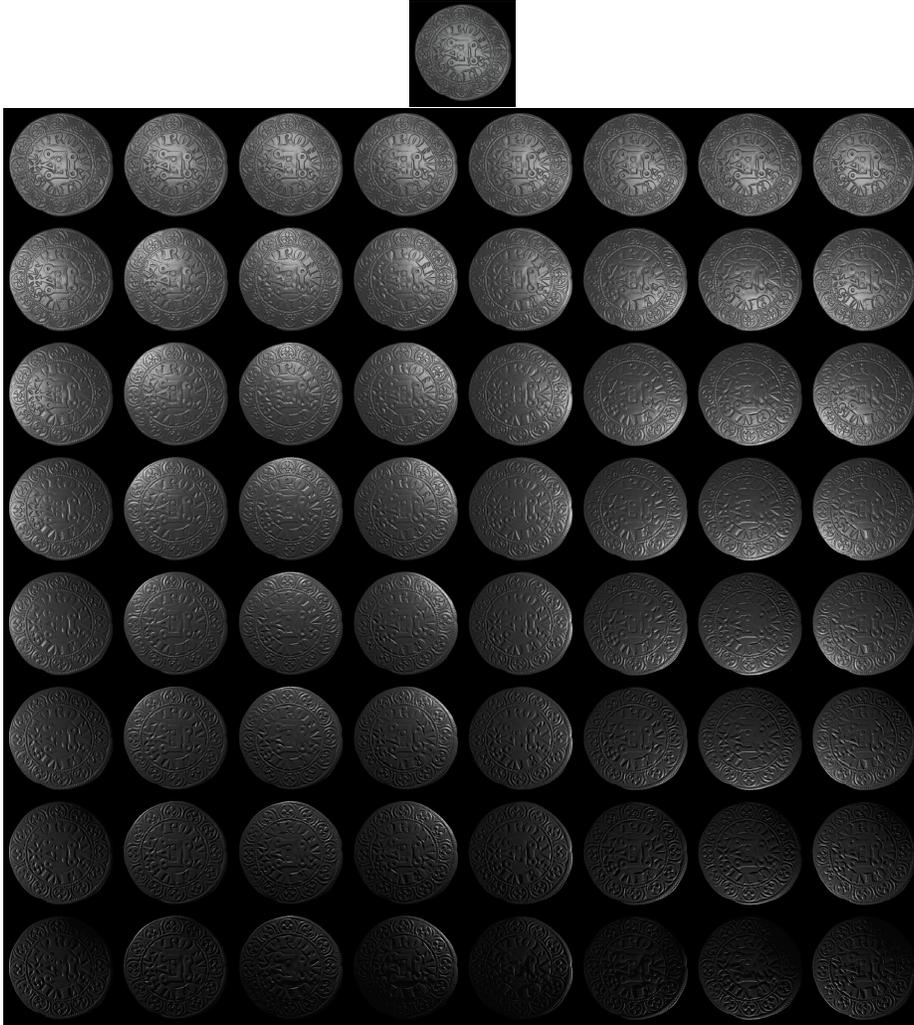


Fig. 4: All 65 images of an object rendered **without texture** and **specular intensity of 0.50**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

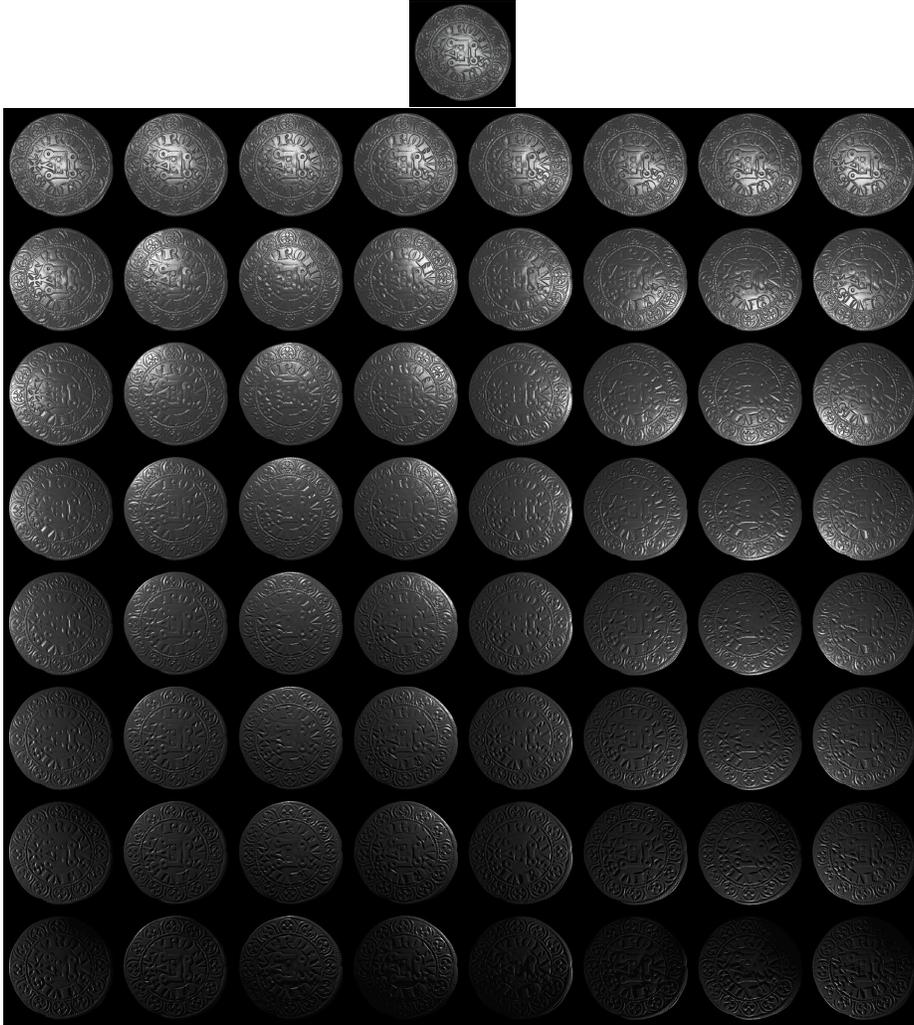


Fig. 5: All 65 images of an object rendered **without texture** and **specular intensity of 1.00**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

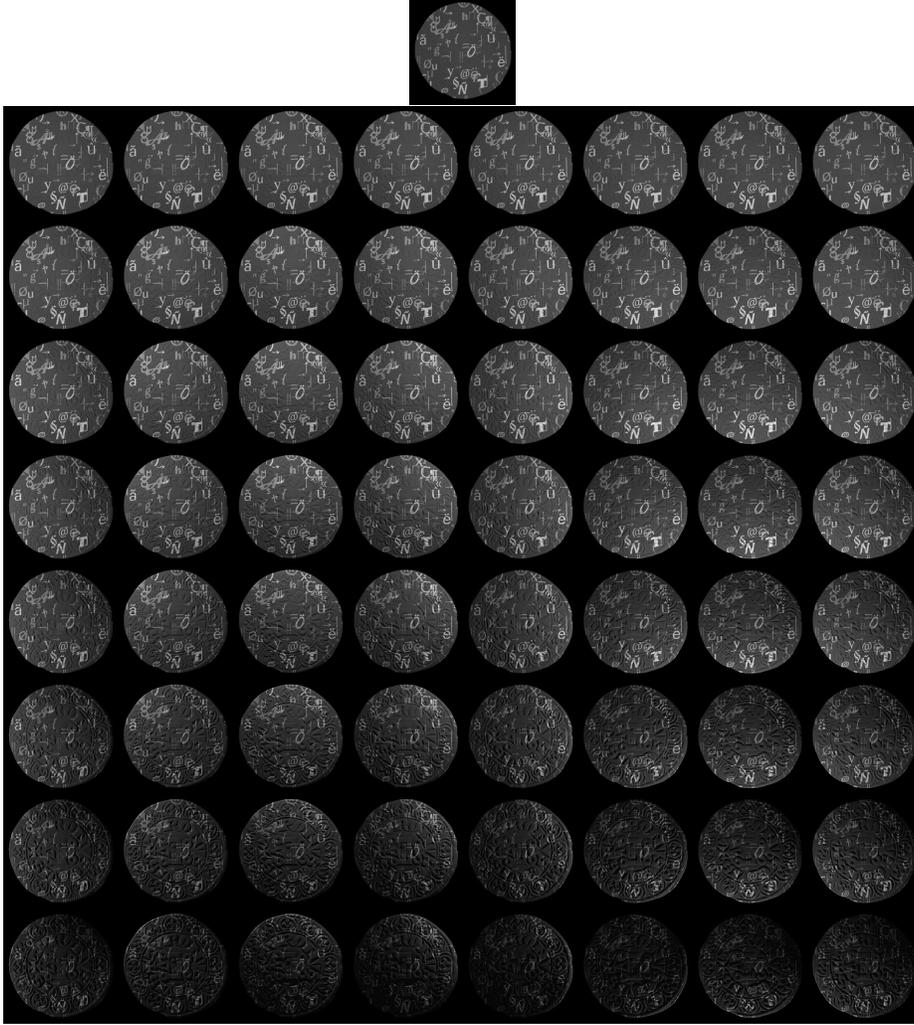


Fig. 6: All 65 images of an object rendered **with texture density level 1 and specular intensity of 0.00**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

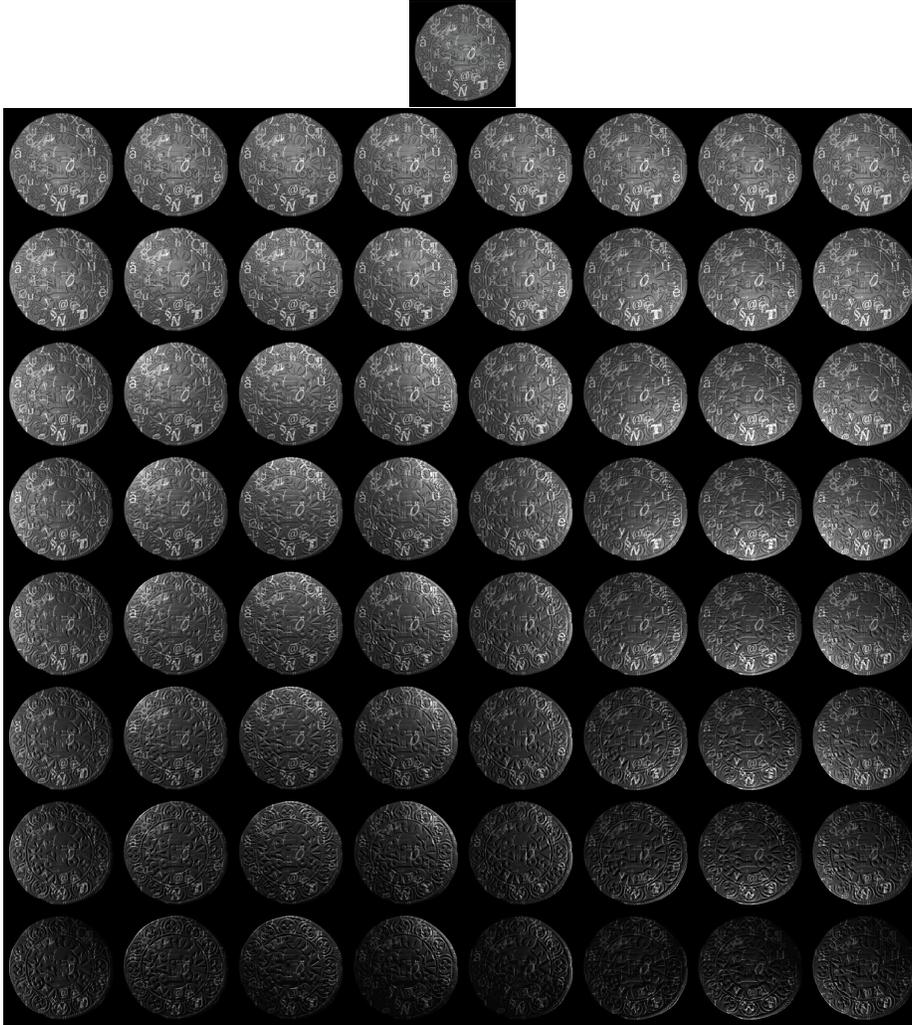


Fig. 7: All 65 images of an object rendered **with texture density level 1 and specular intensity of 0.25**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

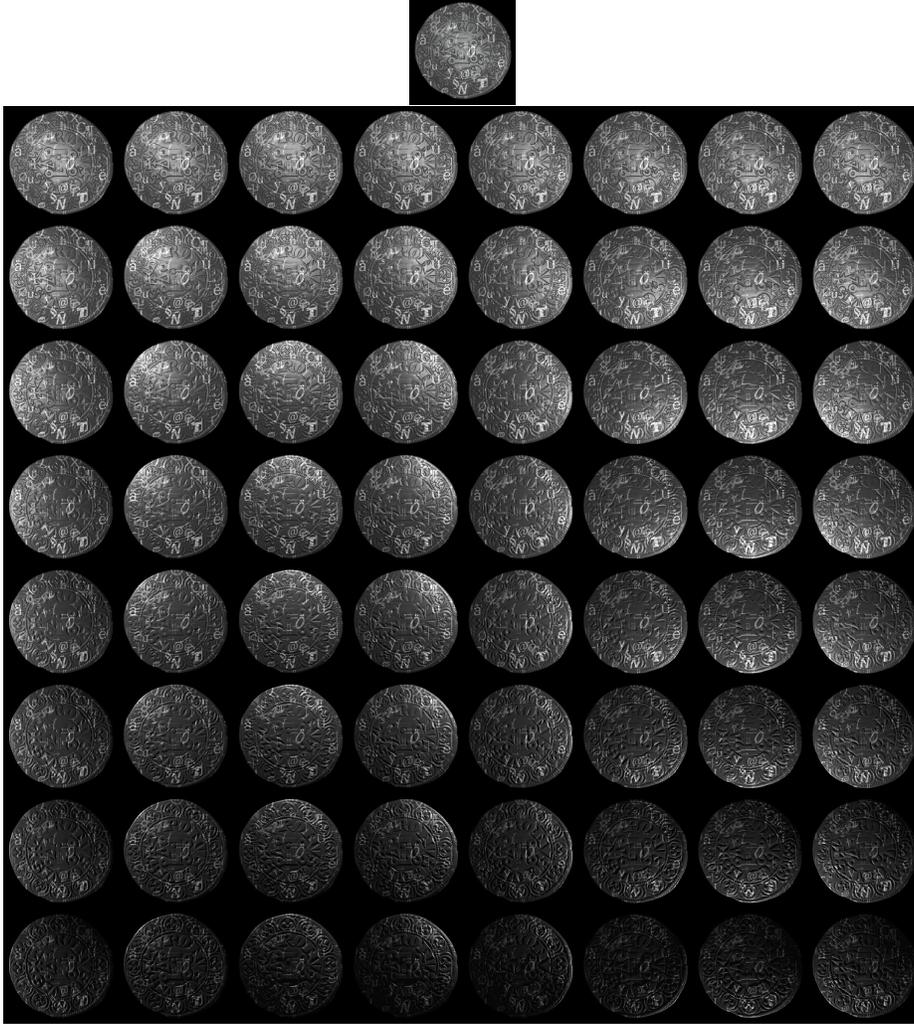


Fig. 8: All 65 images of an object rendered **with texture density level 1 and specular intensity of 0.5**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

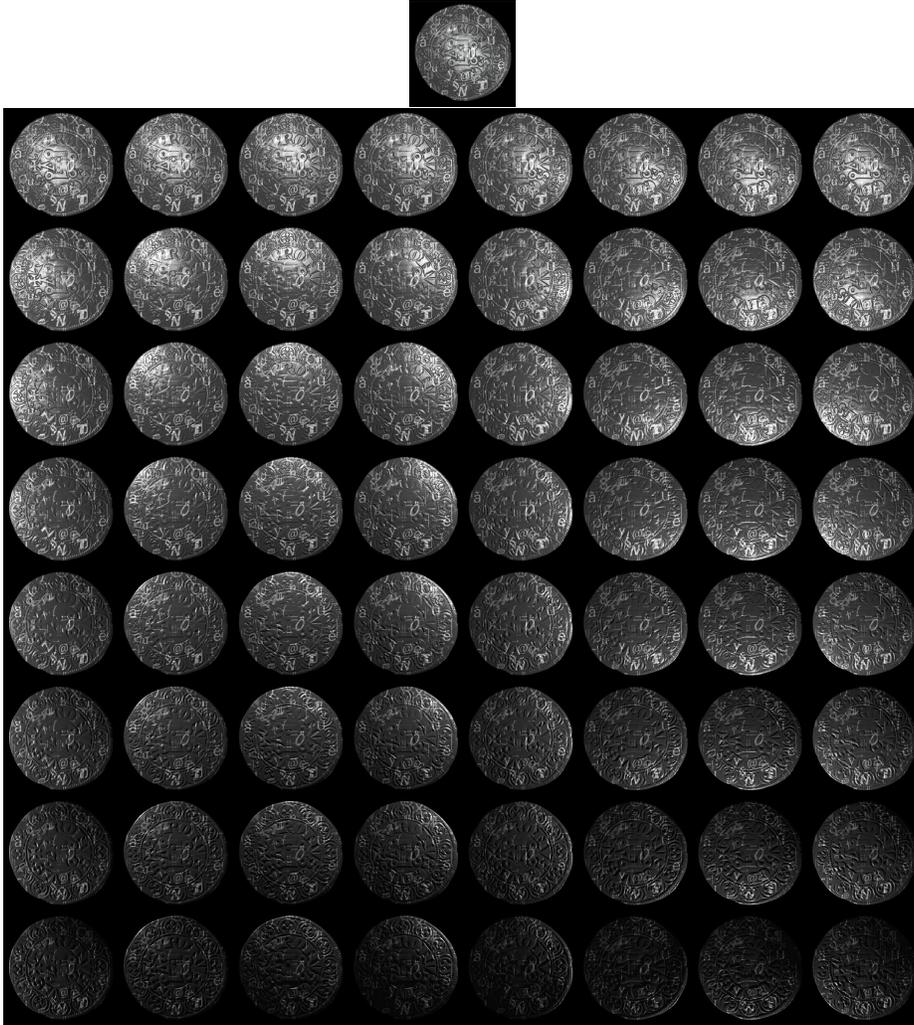


Fig. 9: All 65 images of an object rendered **with texture density level 1 and specular intensity of 1.00**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

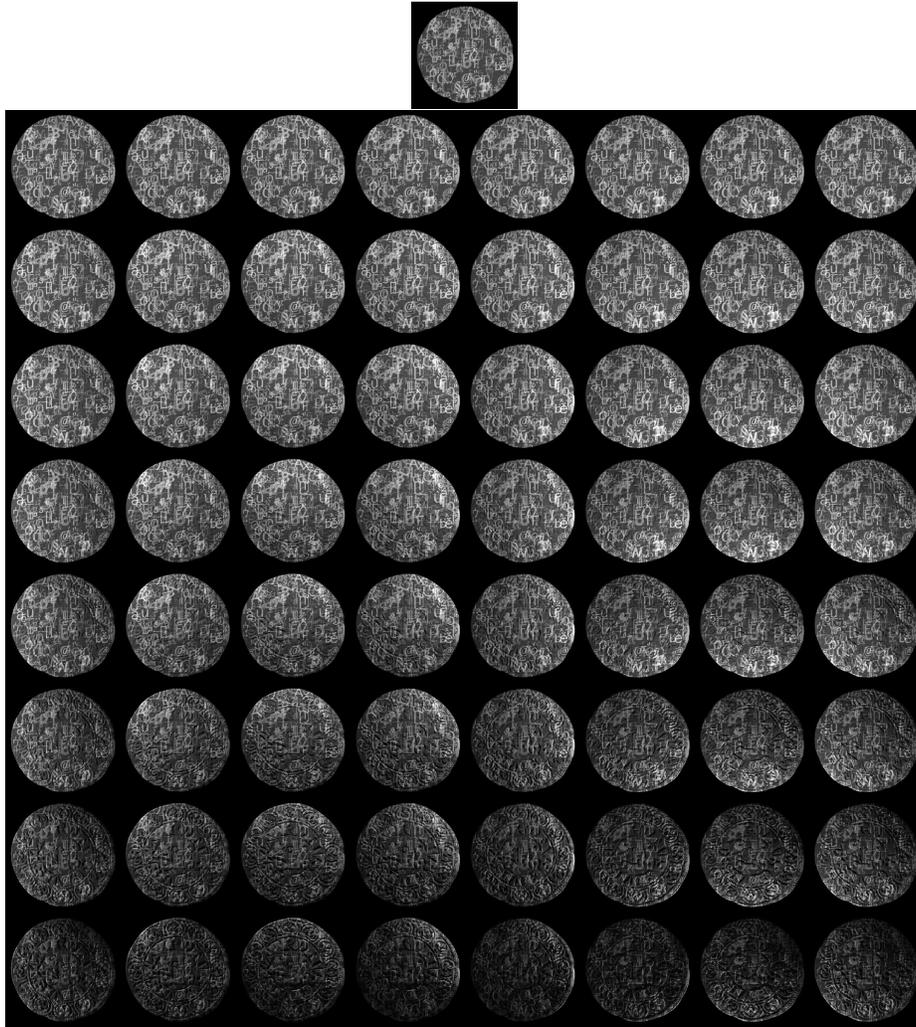


Fig. 10: All 65 images of an object rendered **with texture density level 2** and **specular intensity of 0.00**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

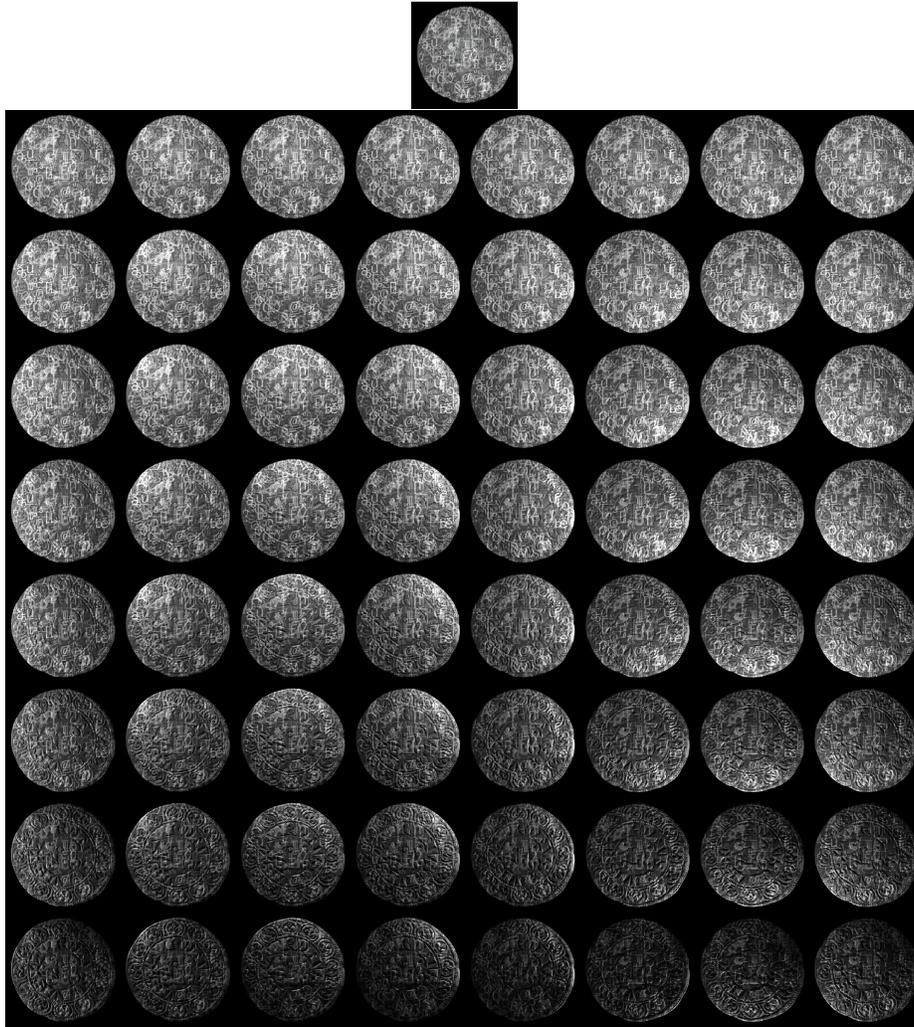


Fig. 11: All 65 images of an object rendered **with texture density level 2** and **specular intensity of 0.25**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

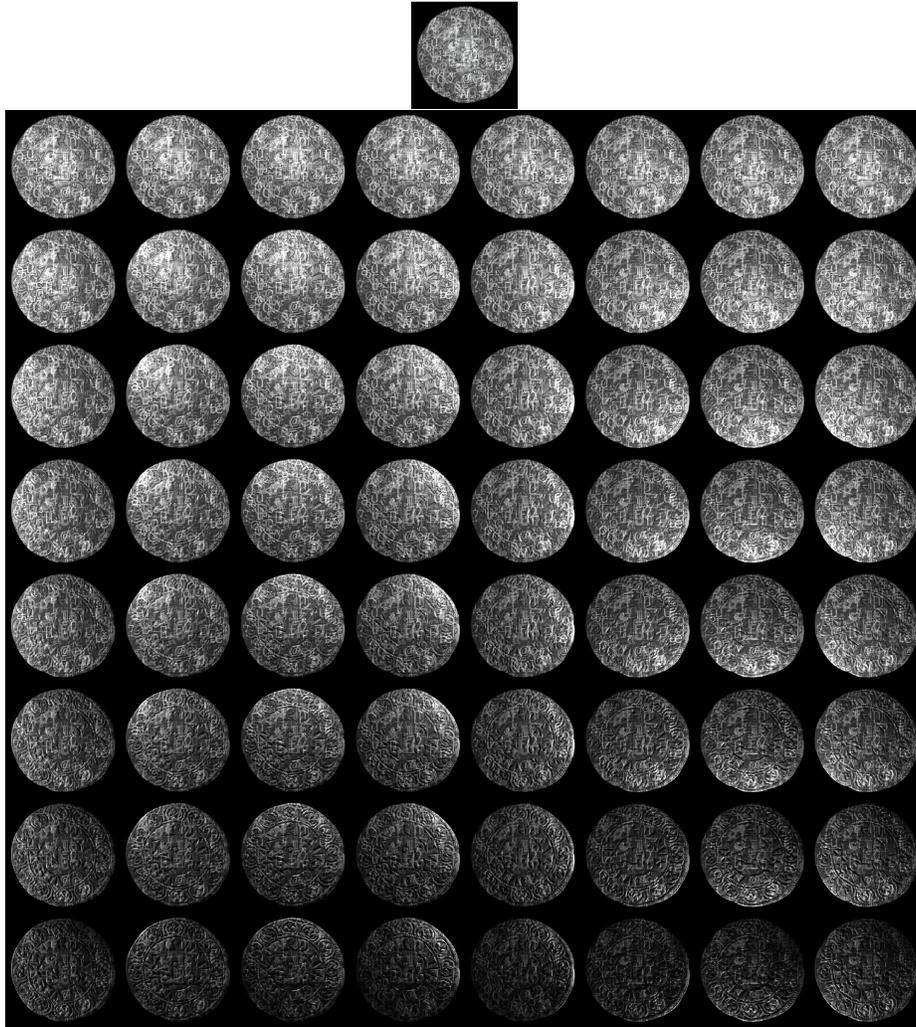


Fig. 12: All 65 images of an object rendered **with texture density level 2** and **specular intensity of 0.50**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.

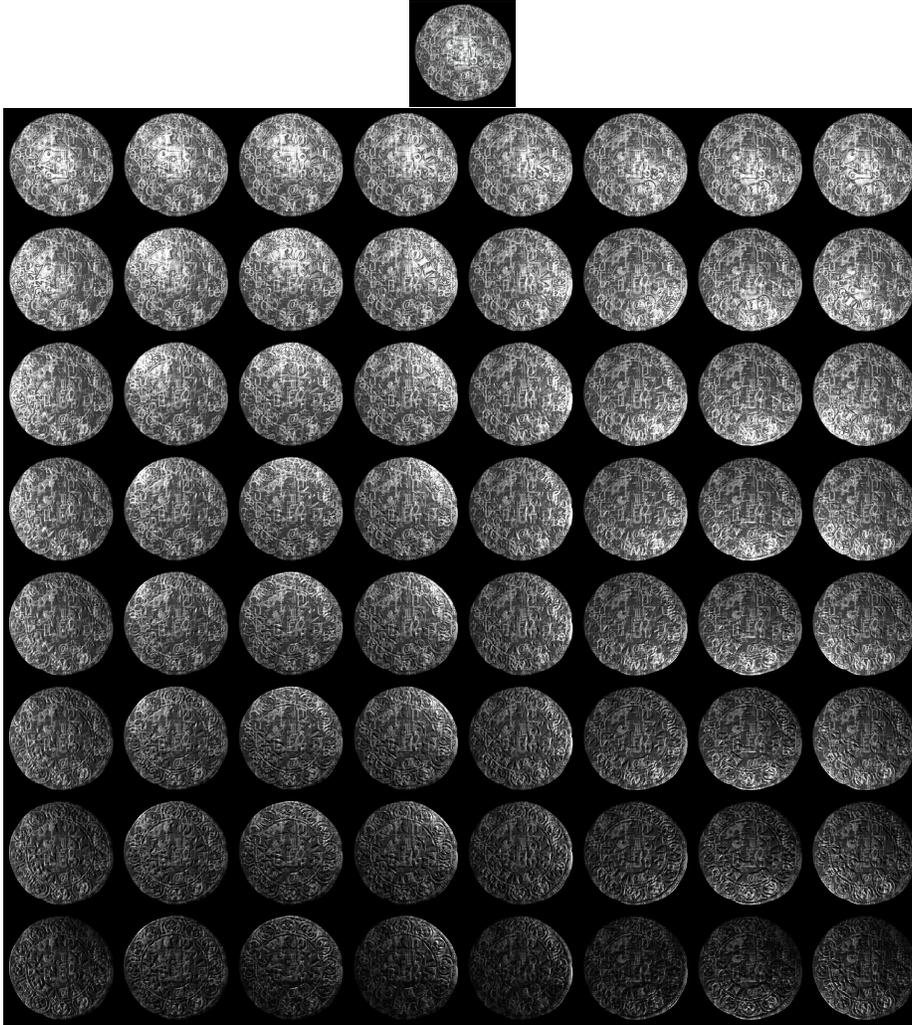


Fig. 13: All 65 images of an object rendered **with texture density level 2** and **specular intensity of 1.00**. The top image has been rendered with the light source elevation $\lambda = 90^\circ$. For the other 64 images, the columns from left to right represent light source azimuth angles ϕ of 180° , 135° , 90° , 45° , 0° , -45° and -90° and -135° , respectively. The rows from top to bottom represent light source elevation angles λ from 80° to 10° in 10° steps.