2.2.4

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Photometric Stereo: Is a method for creating a representation of the Monge patch from the image data.
This is also called a height map, depth map or dense depth map.
It is done by taking images of the same fixed position and with different light sources and then reasoning about the image intensity. $(x+a)^n = \sum_{k=0}^{n} \binom{n}{k} x^k a^{n-k}$

$$B(\boldsymbol{x}) = \rho(\boldsymbol{x})\boldsymbol{N}(\boldsymbol{x}) \cdot \boldsymbol{S}_1,$$

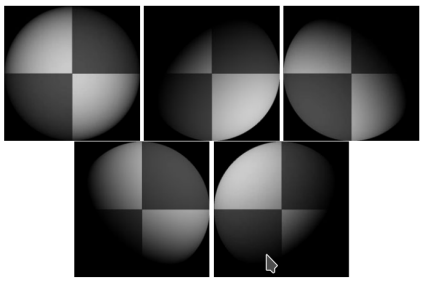

FIGURE 2.11: Five synthetic images of a sphere, all obtained in an orthographic view from the same viewing position. These images are shaded using a local shading model and a distant point source. This is a convex object, so the only view where there is no visible shadow occurs when the source direction is parallel to the viewing direction. The variations in brightness occuring under different sources code the shape of the surface.