

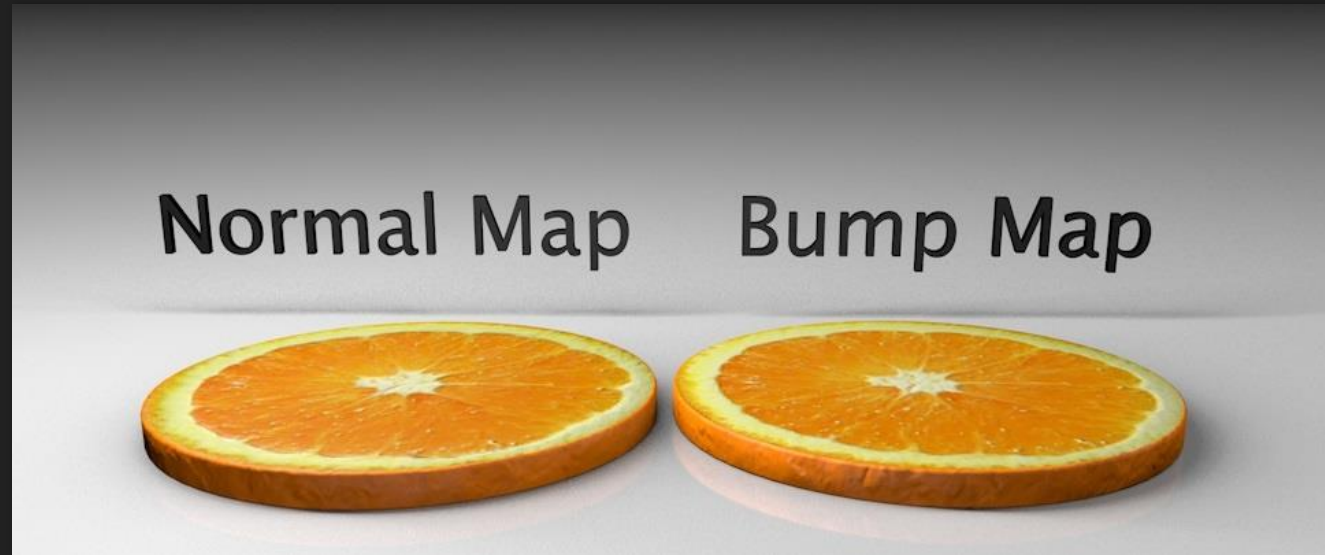
3D Texture Mapping

In-depth discovery of Normal Mapping, Bump Mapping, Relief Mapping, and Displacement Mapping

Introduction to Bump Mapping

Bump Mapping

A number of different techniques exist for creating bump maps, including normal mapping, displacement mapping, and relief mapping.



Demo

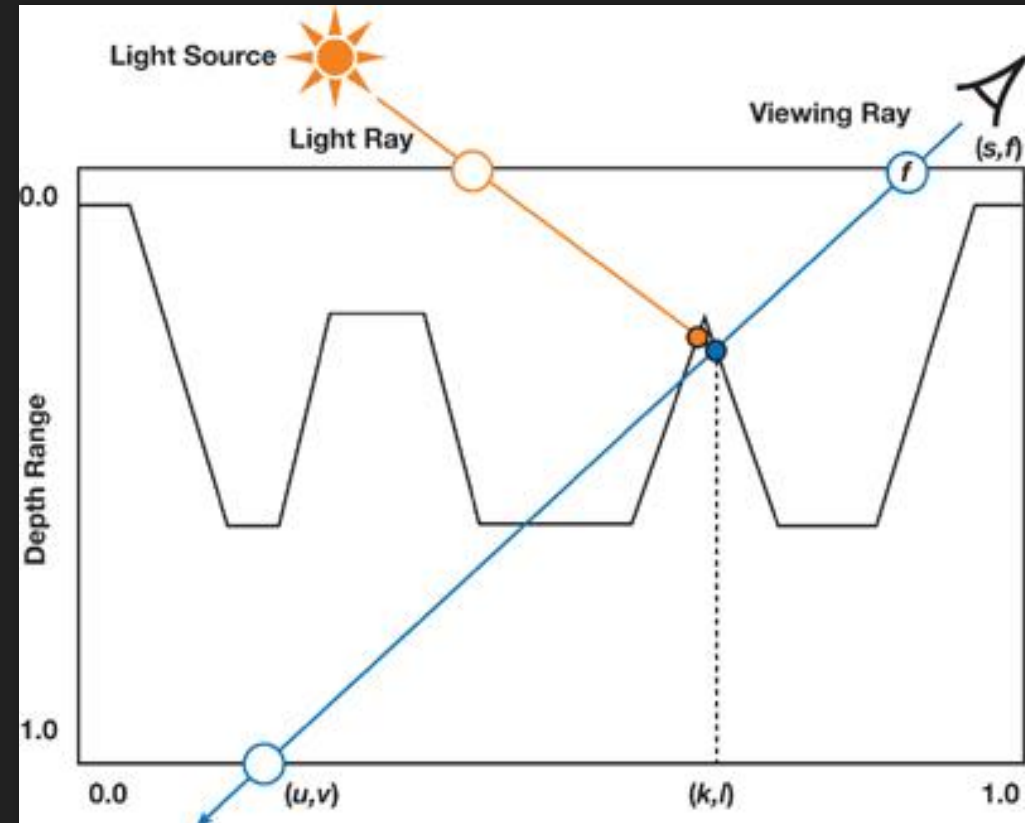
Normal Mapping

Relief Mapping

Relief Mapping

Relief mapping simulates the appearance of geometric surface details by shading individual fragments in accordance to some depth and surface normal information that is mapped onto polygonal models. A depth map ^[1](scaled to the $[0,1]$ range) represents geometric details assumed to be under the polygonal surface.

[Source](#)



Demo

Conventional Texture Mapping



Figure 1. Town rendered using conventional texture mapping. The façades and brick walls represented with one texture each.

Relief Texture Mapping



Figure 2. Same view as in Figure 1 rendered using relief texture mapping. Both scenes contain the same number of polygons. Notice the bricks standing out and the protruding dormers.

Displacement Mapping

Team Members:

- Nicola Fratchesen
- Natalie Rumak
- Xiaoxi Zheng
- Richard Li