(Re)texturing

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Texture Mapping

- Easy Way of Adding Details

- For each Vertex at \((x, y, z)\) we define additional \((u, v)\) coordinates for the texture image
Texture Mapping
Texture Mapping
Retexturing

- Replacing existing Texture with a new Texture
Retexturing
Retexturing

- How to Calculate Texture Coordinates?
- How to Handle the Lighting?
Determining Texture Coordinates

- An Approximation for the Object Surface is Needed

Some Ideas:

- Gradients
- Markers with Known Locations
- Depth Cameras (Kinect)
- Multiple Viewpoints
Occlusions

- Non-Rigid Surface Causes Self-Occlusions
Lighting

- Color of the Original Image is Known
- Lighting Intensity and Original Object Color are not Known
Retexturing with Kinect

- Kinect 2 Camera

**Features:**

- Depth Info
- 3D Real World Coordinates for each Pixel
- Infrared
My Approach

- Texture Coordinates are calculated using real world 3D coordinates (real world X and Y)

- Lighting Intensity estimation from Infrared images
Texture Coordinates

- Only real world X and Y coordinates corresponding to screen pixel coordinates are used.

- A realistic perspective effect is achieved.
Lighting from Infrared
Lighting from Infrared
First Results
First Results
Thank You!