Textures

C. Andrews

Simplest texture mapping

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texture

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v

object

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x

display
General texture mapping

Angel, fig 7.5

Angel, fig 7.6
Aliasing

Angel, fig 7.7

point sampled  linear filtering

GPU Gems, fig 25-1
Sampling from the texture

point sampled (nearest)

linear filtering
Minification vs. magnification

Angel, fig 7.17

minification

magnification
Mipmapping

http://www.tomshardware.com/reviews/ati.819-2.html
Mipmappiing

(a) Point sampling

(b) Linear filtering

(c) Mipmapped point sampling

(d) Mipmapped linear filtering

Angel, fig 7.18
Mipmapping

http://www.tomshardware.com/reviews/ati,819-4.html
Mapping textures to shapes

Angel, fig 7.9
Sphere mappings

http://en.wikipedia.org/wiki/File:Sphere_wireframe_10deg_6r.svg

http://xkcd.com/977/
Mapping to an intermediate object

Angel, fig 7.10

Angel, fig 7.11
Diffuse texture maps
Decals

Texture mapped fonts

http://home.pacific.net.hk/~edx/texfont.htm

http://www.tinrocket.com/superspritesurface/
Billboarding

Bump mapping


http://tom.drastic.net/stuff/mudbox--3ds-max/
Displacement mapping

Base Model

Bump Mapping

Displacement Mapping

http://www.nvidia.com/object/tessellation.html
Luminance or light maps

"Lightmap Cube Sample" by Narpas
Luminance or light maps

http://xonotic.org/posts/2012/xonotic-0-6-is-now-available/
Environment mapping
Sky box
Shadow maps

Distances stored in a texture ("shadow map")

Projected shadow

http://www.opengl-tutorial.org/intermediate-tutorials/tutorial-16-shadow-mapping/
Shadow maps

http://www.opengl-tutorial.org/intermediate-tutorials/tutorial-16-shadow-mapping/