

Rays of Light through Stained Glass Windows

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Proposal Image



Core Graphics Technical Concepts

- Volumetric Light Scattering to generate “God Rays”
- Generic Refraction through God rays
- Projective Texture Mapping
- Phong Shading with falloff

Model Creation

- Preprocessing and export from sketchup warehouse
- Normal directions in Blender
- Model editing in Blender
- Exporting various parts of the model (wall, floor, windows) to different obj files
- Importing model using STShape
- Adding material attribute to model

Multi Pass Rendering

1. Render stained glass windows + black occluded scene offscreen to texture 1
2. Render window map + black occluded scene offscreen to texture 2
3. Render regular scene + black window offscreen to texture 3
4. Render a quad to screen with textures from steps 1,2,3
 - a. Post processing in fragment shader for Refraction and God ray effect
 - b. Blend refraction + God ray result to create final scene

Sources

- Volumetric light scattering: GPU gems chapter 13 -
http://http.developer.nvidia.com/GPUGems3/gpugems3_ch13.html
- Generic Refraction through Stained glass: GPU gems chapter 19 -
http://http.developer.nvidia.com/GPUGems2/gpugems2_chapter19.html
- Scene model -
<https://3dwarehouse.sketchup.com/model.html?id=7213fe7a37b7d6bbd0656aee7124fe30>
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