

PROJECT 1: DEFERRED SHADING

REPORT BY TRISTAN BASKERVILLE

CS-562 SPRING 2022

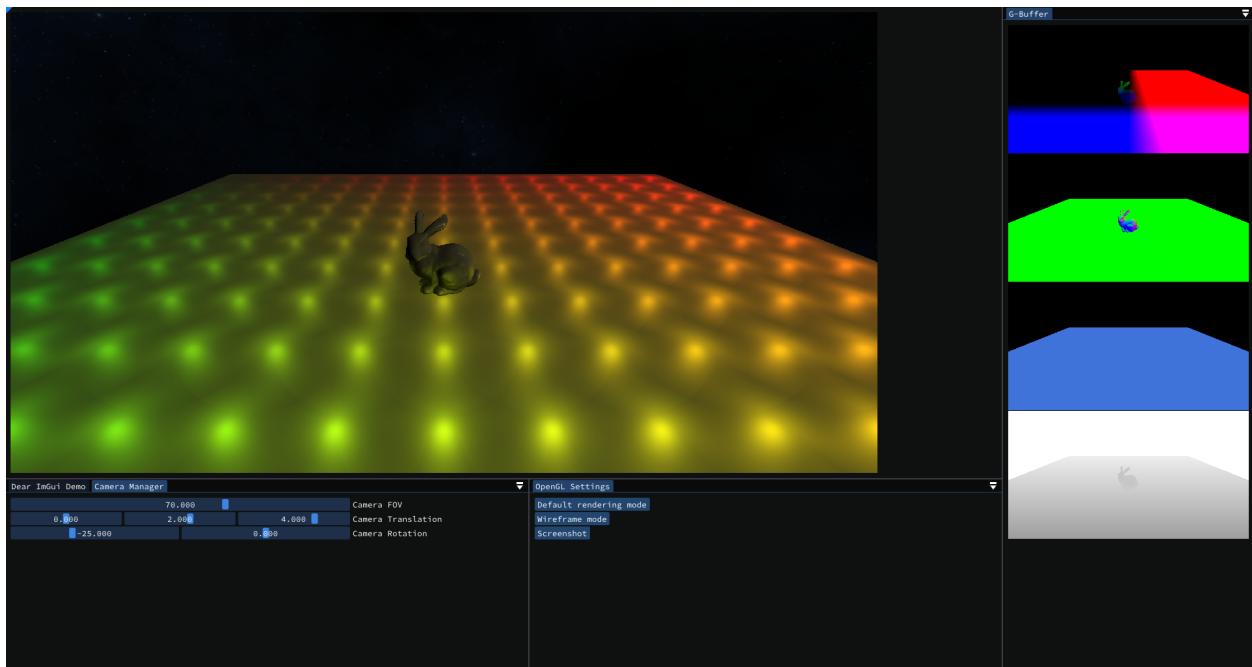
DR. GARY HERRON

PROJECT OUTLINE

The goal of this project was to support a deferred rendering pass, with the addition of many local lights being forward rendered onto the scene following the deferred rendering pass. This project was implemented alongside my GAM400 engine, which has various levels of support for most graphics calls. As such, a majority of implementation works with OpenGL wrapper classes, and less so of direct OpenGL calls.

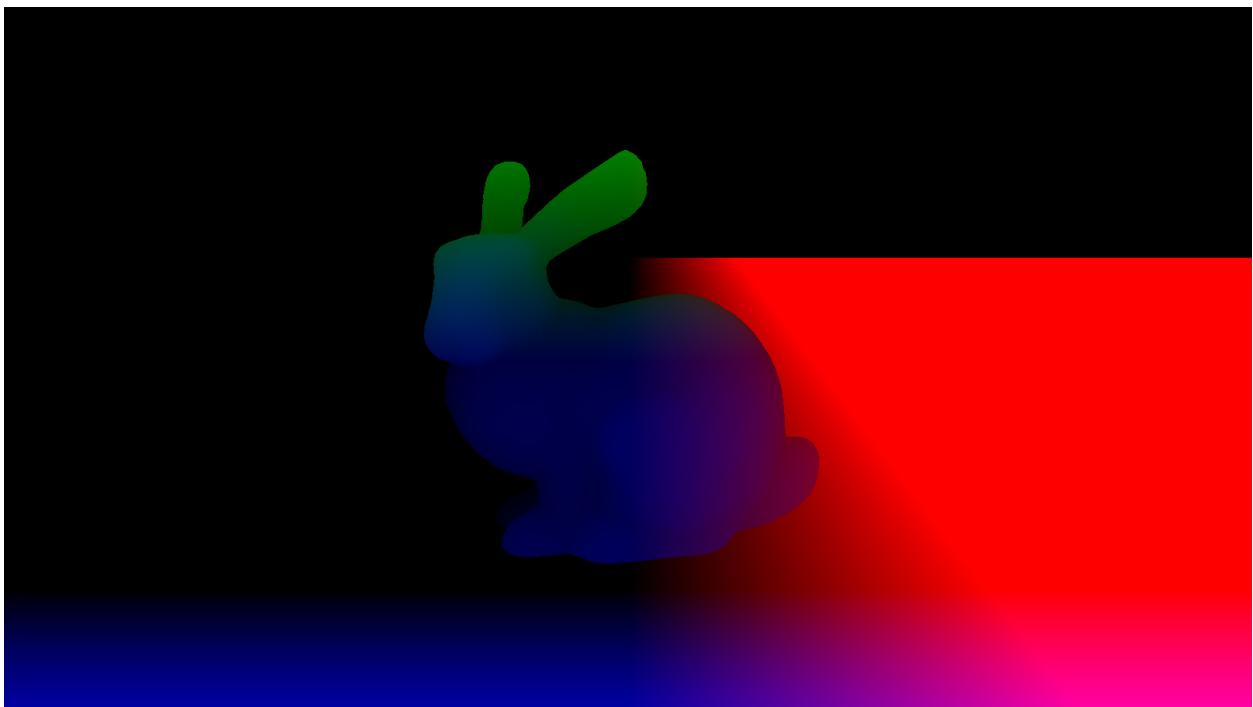
PROJECT IMPLEMENTATION

To find the implementation of various aspects of this project, please consult the index at the bottom of this document. Results were verified using ImGui as the main interface to this engine, in addition to RenderDoc being used to debug various parts of the OpenGL pipeline.

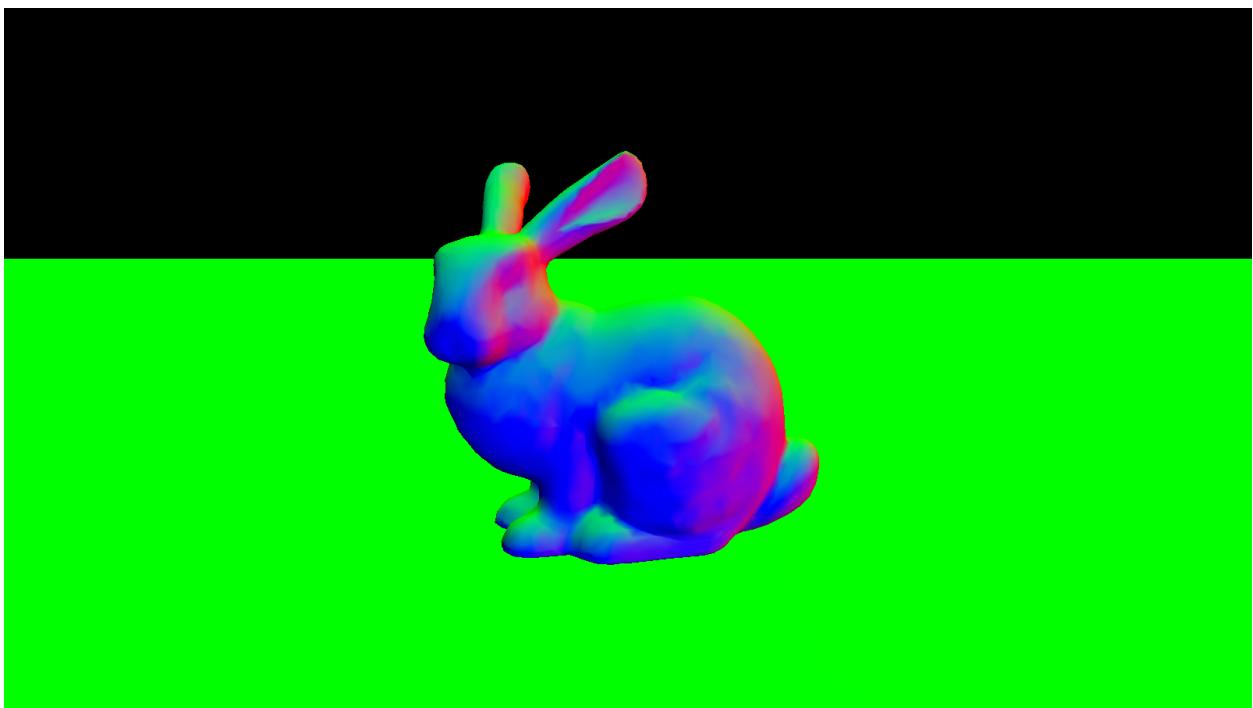


G-BUFFER LAYOUT

Attachment 0: Fragment's Position in world space

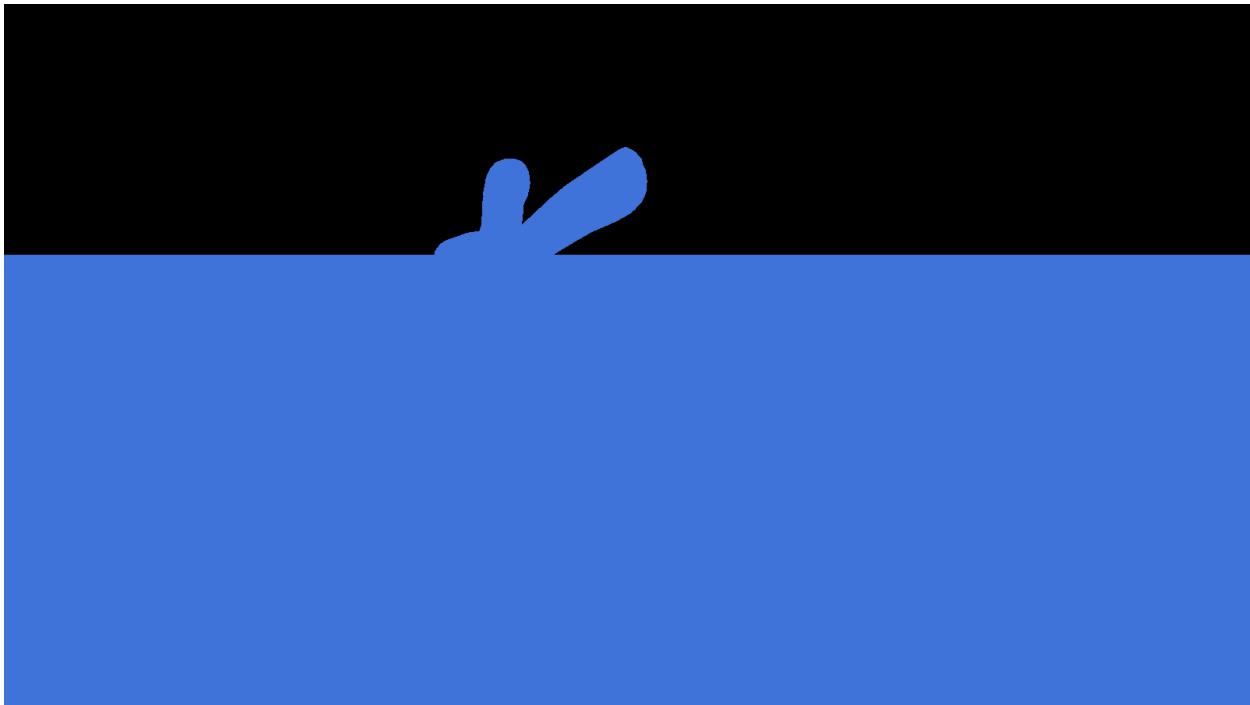


Attachment 1: Fragment's Normals in world space



Attachment 2: Fragment's Albedo (RGB) and Specular (A) values

- Currently all entities use the same material; support exists for the future.

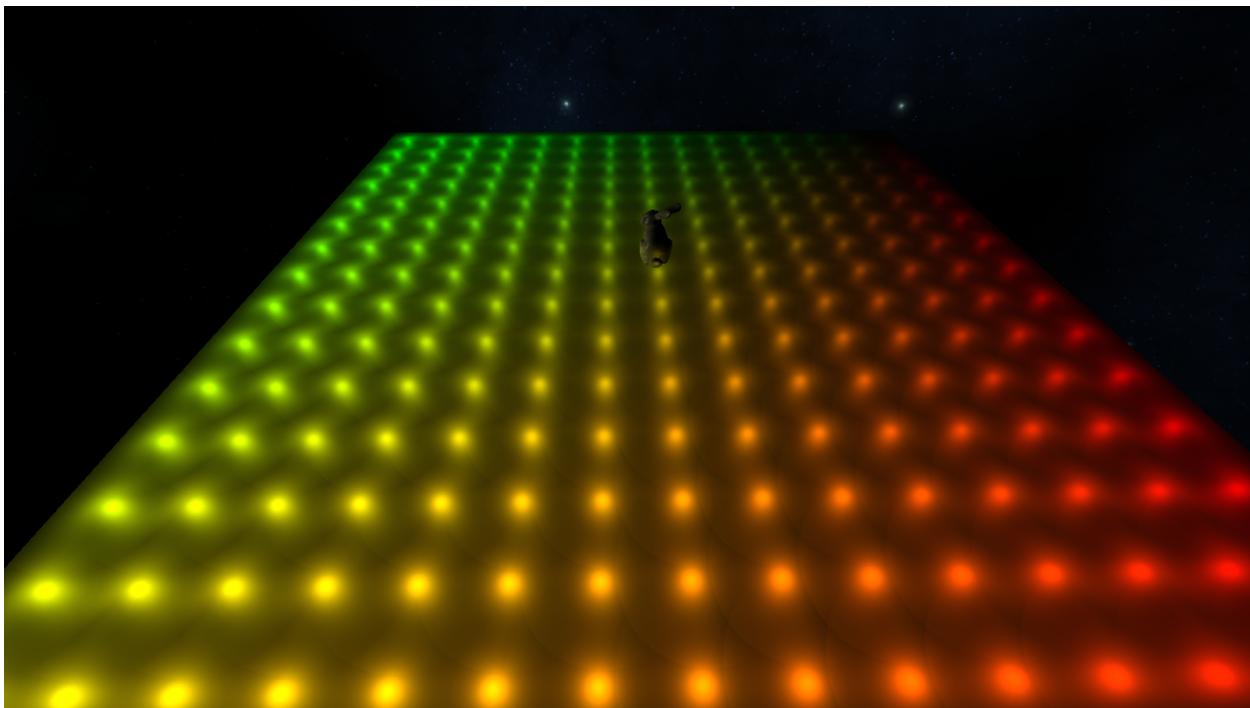
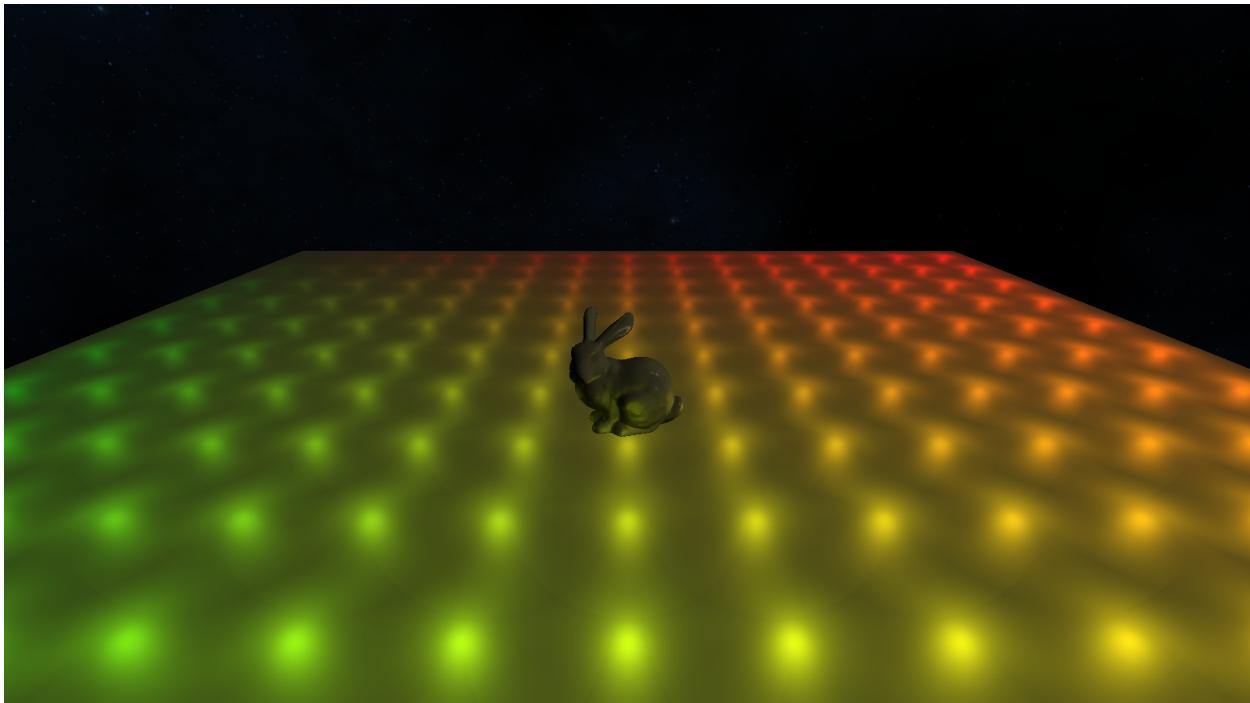


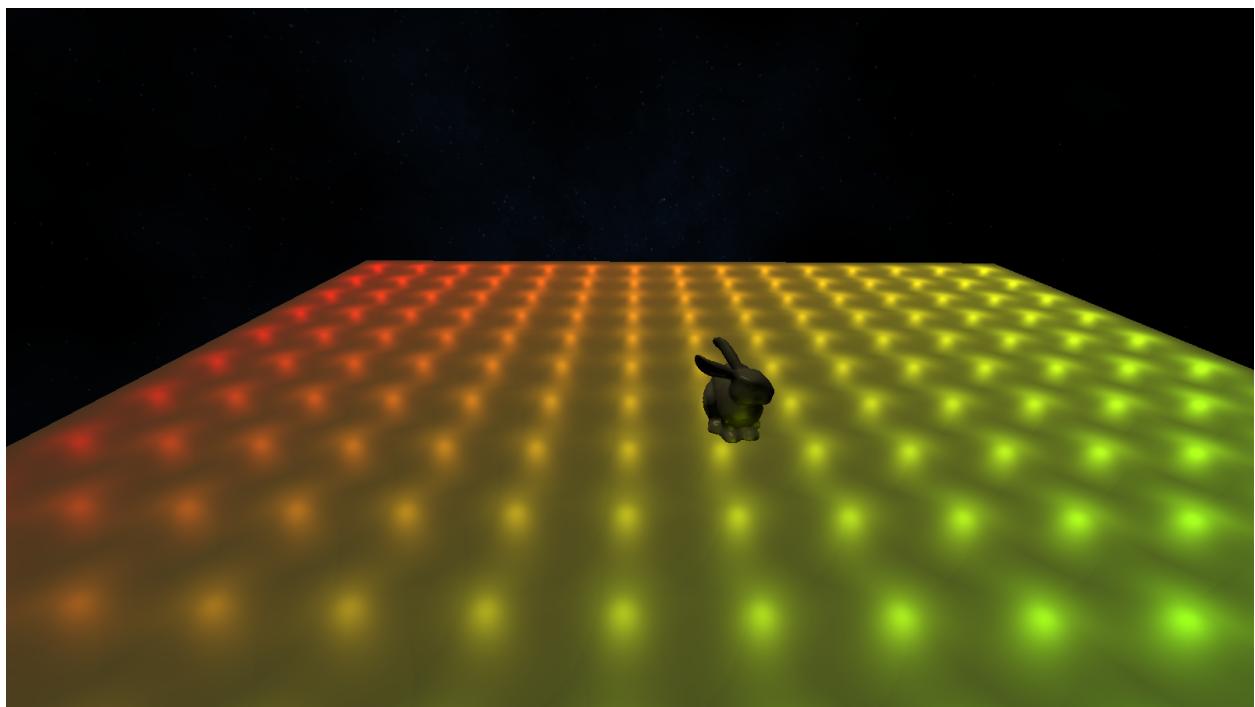
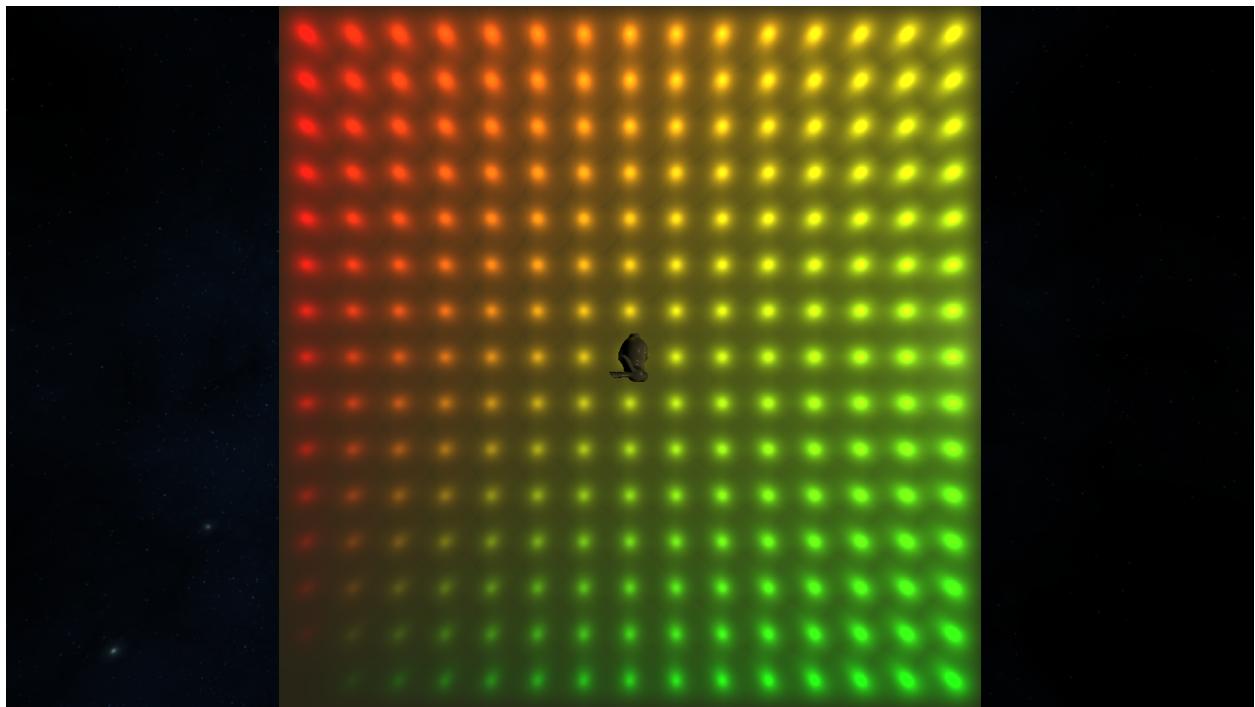
Attachment 3: Depth of a fragment, non-normalized



PROJECT RESULTS

The scene is using a single directional light with a direction of $[-1 -1 0]$, and 225 local lights spread throughout the scene.





DIRECTORY INDEX

All files related to this project can be found under `./Project-1/Framework/Input/`. Other external directories are used to compile and run the engine.

RELEVANT FILES

G-Buffer shader.....	<code>Shaders/gbuffer.frag</code>
Local Lights shader.....	<code>Shaders/local-lights.frag</code>
Framebuffer implementation.....	<code>Source/Graphics/Framebuffer.*</code>

IMPLEMENTATION

G-Buffer creation.....	<code>Source/Services/RenderingService.cpp</code>	L29-L38
Local light setup.....	<code>Source/Services/SceneLogic.cpp</code>	L86-L104
Deferred/Local Lights Passes.....	<code>Source/Services/RenderingService.cpp</code>	L106-L125