

Group 42 Submission 3 — Neon Noir

Martin Gerdenich (11776233) — Florian Wagner (11907095)

January 16, 2024

Development Status

As stated in the project proposal we use OpenGL with a custom engine. Nothing changed so far in the development process. For our demo we currently use:

- GLEW
Used by the framework encapsuling OpenGL calls
- GLFW 3
Used by the framework to create native Windows
- GLM
Used by the framework for vector and matrix calculations
- irrKlang
Used by the framework for basic audio
- stbi
Used by the framework to load image data from disk
- AssImp
To load 3D models from disk

Controls

There are no camera controls. We have added two short camera movements that work fully automatically once the scene is loaded. There is however a settings.ini file in /bin/assets/ which allows for some settings of the scene to be changed.

Implemented Effects

We have implemented the complex effects:

- Deferred Shading
Not visible itself when running the demo as is. However, the street lights, as well as the neon sign are rendered after the deferred rendering pass using forward rendering into the same framebuffer.

- SSAO
Visible at the computers in the first scene as well as in the edges. Additionally in the settings.ini file one can set the output buffer to the ssao buffer.
- Area Lights
As seen in the scene we used a total of 5 area lights (4 in the first scene, 5 in the second, although not all are visible).
- Shadow mapping with pcf
Visible in the first scene behind the monitors as well as the pipe on the right. Only one light does cast the shadows!
-

Additionally we implemented the simple effects:

- Physically Base Bloom
Pretty much visible at all times. (The dirt map is also part of this.)
- Simple Tone-mapping
Although we tried to not use the approximation of $1./\text{gamma}$ etc. but use a more precise version. (<https://chilliant.blogspot.com/2012/08/srgb-approximations-for-hlsl.html>)
- Chromatic Aberration Saddle effect visible every now and then throughout the whole demo.
- Filmgrain Some film grain (pretty simple noise) animated over time but it helps bring together the scene.

Graphics Cards

We have tested it on Nvidia Geforce GTX 1080Ti and Nvidia RTX 2080