

### No Way Outta The Sewer - 2nd Submission Documentation

- Brief description of the implementation, in particular a short description of how the different aspects of the requirements (see above) were implemented.

#### **Gameplay**

Click the left mouse button to start running in the sewer, avoid obstacles like pipes and water gaps by jumping with a left mouse button click or space. Navigate the cat through the sewer by tilting the mouse left and right.

#### **Complex Objects**

Create Meshes of imported .obj Files with Assimp

For Example the cat or any pipe is an complex objects (more than flat surfaces)

#### **Animated Objects**

The Cap of the Player is rotating

#### **View-Frustum-Culling**

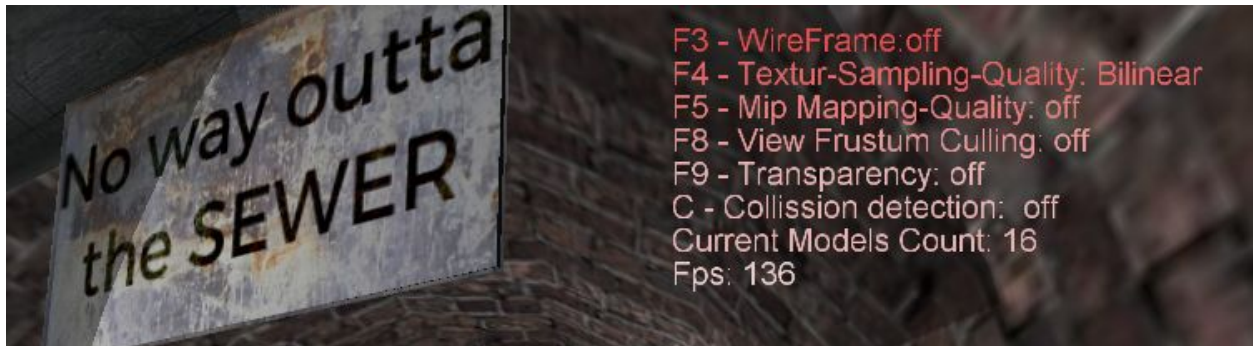
Bounding Box

Only render vertices inside of the bounding box to increase game performance.

#### **Transparency**

Adjusting The Alpha Channel resulting in a transparent world.

## Experimenting with OpenGL



- “Features” of the game.

Random - Levelgenerator

- How and which objects were illuminated (description of light sources) or textured.

Every Object in the Sewer is illuminated including the player and every model. Only spotlights are throwing shadows, normal light points do not have any shadows.

- What additional libraries (e.g. for collision, object-loader, sound, ...) were used, including references (URL) (see restrictions)?

Assimp for Model-Loading

OpenGL Helper:

GLFW

GLEW

Image Loader:

FreeImage

2D Text Renderer

Freetype

Collision Detection and Physics

Bullet

Mathematics

GLM

- Which Effects are implemented

Shadowmaps

Spotlights

- How you've implemented those Effects (Links/References to papers, books or other resources where the effect is described and a description of your extensions to it)

for Lights (Point Light and Spotlight) orientated on this link

[https://en.wikibooks.org/wiki/GLSL\\_Programming/GLUT/Multiple\\_Lights](https://en.wikibooks.org/wiki/GLSL_Programming/GLUT/Multiple_Lights)

For shadow mapping the cg-presentation about shadow mapping +

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

For Collision Detection

[http://www.bulletphysics.org/mediawiki-1.5.8/index.php/Main\\_Page](http://www.bulletphysics.org/mediawiki-1.5.8/index.php/Main_Page)

<https://www.toptal.com/game/video-game-physics-part-i-an-introduction-to-rigid-body-dynamics>

View-Frustum-Culling

[http://zach.in.tu-clausthal.de/teaching/cg\\_literatur/lighthouse3d\\_view\\_frustum\\_culling/](http://zach.in.tu-clausthal.de/teaching/cg_literatur/lighthouse3d_view_frustum_culling/)

FreeType Tutorial

<http://learnopengl.com/#!In-Practice/Text-Rendering>

- Other special Features in your Game

Game Over Screen

- What Tools have you used to create the Models (Maya, 3DS MAX, ...).

All Models are created with Cinema4d + Riptide Pro Plugin for C4D

- For complex interaction sequences (which could already be something like opening a door in the game for example) please also include a step-by-step instruction on how to get through the game.

There are no complex interaction in our game.