

# Survive The Wild

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## 1. Free movable camera

A free moveable camera is achieved as a first person camera. You can move the position of the camera with WASD and change the vertical and horizontal angle with the mouse like in a ego shooter or another first person game.

## 2. Moving objects

Deers are running away from the player and randomly. They avoid water, and run away from impacting stones. If a deer moves, its legs are animated with vertex skinning.

Stone is throwable with clicking the left mouse button.

## 3. Texture Mapping

The ground is texture and normal mapped.

Deers and Stone are texture mapped.

## 4. Simple lighting and materials

All objects have a directional light on it.

Ground has a normal mapping.

Geometries can have a specular material (shininess and specular color). Currently deers have a specular material.

## 5. Controls

Move forward with W, backward with S, left with A and right with D. Forward is where you look at. You can change where you look at with the mouse, see moveable camera.

By clicking the left mouse button, a stone is thrown, there is currently only one stone which is always the same.

## 6. Gameplay

You can shoot a deer with the stone. By clicking the left mouse button a stone is thrown where you look at. If you hit a deer it falls to the ground. You can eat a dead deer, if you aren't thirsty, e.g. water bar is not empty. You can refill water at the see somewhere on the island. If you eat, your health bar will regain. If your healthbar is zero, you are dead. If you find the house, you have survived the wild.

## 7. Effects

Markus Ginthör:

**GPU Vertex Skinning:** Deers are animated with vertex skinning.

Tutorials: <http://www.opengldev.org/www/tutorial38/tutorial38.html>,  
[http://www.gamedev.net/page/resources/\\_/technical/graphics-programming-and-theory/skinned-mesh-animation-using-matrices-r3577](http://www.gamedev.net/page/resources/_/technical/graphics-programming-and-theory/skinned-mesh-animation-using-matrices-r3577)

Stefan Stappen:

**Tessellated Terrain LOD:** Terrain is rendered with Level of Detail with GPU Tessellation from a 16-bit grayscale heightmap.

Tutorials: <http://codeflow.org/entries/2010/nov/07/opengl-4-tessellation/>,  
<http://prideout.net/blog/?p=48>, <http://prideout.net/blog/?p=49>

**Water Mesh (Tessellation-LOD):** Water is rendered with Level of Detail with GPU Tessellation from sinus-curves which move depending on time. Water is transparent.  
Tutorials: same as Terrain, but additionally: <https://habibs.wordpress.com/lake/> for some ideas of water

#### 8. View Frustum Culling

Is implemented with Bounding Spheres described in  
<http://www.lighthouse3d.com/tutorials/view-frustum-culling/>

#### 9. Shadow Mapping with PCF

Implemented like in this tutorial:  
<http://www.opengl-tutorial.org/intermediate-tutorials/tutorial-16-shadow-mapping/>

#### 10. Tools

Blender: to optimize models, make animations for vertex skinning with bones from model  
Visual Studio: Implementing the game  
L3DT: For the heightmap with all additions (texture, normals, area, water height, ...)

#### Features:

Walking on Terrain with collision detection and stone throwing.  
Deer and stone collision is detected with bullet collision detection.  
HUD is rendered with live and water bar and item bar. States are connected with player stats.  
Instancing was implemented for Stones, so many stones can be thrown (see god mode)

Because it is hard to win, or play, due to fast loss of health, a god mode is available. Just press F10 and you enter god mode. To leave god-mode again press F10.

#### External Libraries:

Bullet Physics Engine: <http://bulletphysics.org/wordpress/>  
AssImp Model Loader: <http://www.assimp.org/>  
GLM Math Library: <http://glm.g-truc.net/0.9.7/index.html>  
FreeImage Image Loader: <http://freeimage.sourceforge.net/>  
GLEW OpenGL Extension Wrangler: <http://glew.sourceforge.net/>  
GLFW Windowing Library: <http://www.glfw.org/>  
OpenAL Soft: <http://kcat.strangesoft.net/openal.html>  
Libsndfile: <http://www.mega-nerd.com/libsndfile/>