Virtual reality

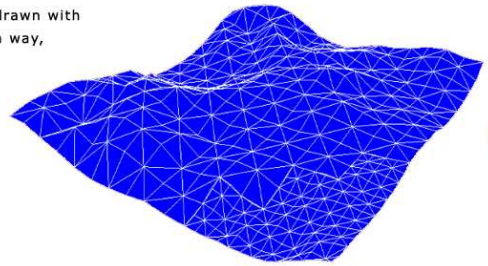
The purpose of the project

The final project extends the previous roamer project and adds the ability of a simple game play. The game play is to collect objects from the scene and upon how many objects are picked, the player will get some points. The game play is implemented in way that it fits with the rest of the technical contributions that has been made, suck like Level of detail and view frustum culling besides others that is covered in the report.

Level of details

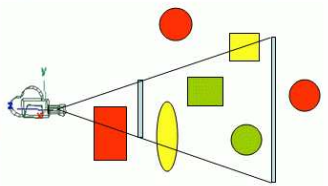
Leve of details has previously been added to the terrain and in this project it is extenden to be applied on the objects, such like trees and spiderman-head.

This means that objects that placed away from the camera position will be drawn with less quality (fewer triangles). Going from LoD to another will have a smooth way, hence the user won't see the object pumping, this has been archived by generating an array of display lists that has lesser and lesser quality.
Tests shows it is both good for increasing the FPS preformance and looks good in the roamer scen.



View frustum culling

View frustum culling has previously been applied to the objects on the scene (trees and spiderman-heads) in a way that removes any object that is outside the frustum plan. This has been extenden and applied to the terrain.
The terrain has been divided into quads, and those that outside the frustum plan will be excluded from the scene



Tests shows that that is effectives and increases the the preformance of the application with additioal 15 FPS in average.

Skirt and blending

Applying the LoD on the terrain can cause holes in th edges of the quads. This problem can be solved by adding extra quads at the ends of every quads' edge and this result in hiding every holes that can occour.

Water transparency looks more realistic and gives the water plan the variety of the terrain, this has been done by blednіng the alpha value of the water plan which results a very nice and smooth water looking.