**Blood, sweat, and voxels**

(brought to you by πVoxelTeam)

With a growth of the computers’ performance many of the technologies once considered impossible are becoming routine. One of many examples is ray-tracing which was thought to be the future tech for the last 20 years. Now we can see the biggest companies implementing it in their most hi-tech solutions for regular users. Another example of the technology yet thought to be futuristic is the representation of objects via the formations of the smallest possible fractions (voxels). The idea was invented many years ago but in that time there wasn’t enough computing performance to render that amount of different objects (at least in 3d as there are successful implementations in 2d).

We want to improve the user's experience of interacting with the game-world and make this world feel more realistic. That’s why we decided to use the voxel world representation. What we call a voxel is the smallest indivisible volume element of a cubic shape which is used to simulate the whole virtual world as small atomic blocks with material properties.

This approach is completely different from the classical polygonal modeling, where there is nothing but a surface of the object which is created by a combination of lots of triangles, while the object itself stays hollow. By selecting voxel-representation we can add a volume to the object which helps us simulate the world more realistically. For example voxels are good to simulate distractible objects, dynamically changeable landscape, fluids and other staff.

As the first part of the project we want to develop a rendering software for scenes built with voxels. After being able to build a scene we want to add dynamically changeable surroundings.

The final result of our project will be the library which can be used to build different voxel scenes by other developers.

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