GigaVoxels, RTIGE ANR work

Pascal Guehl , Fabrice Neyret

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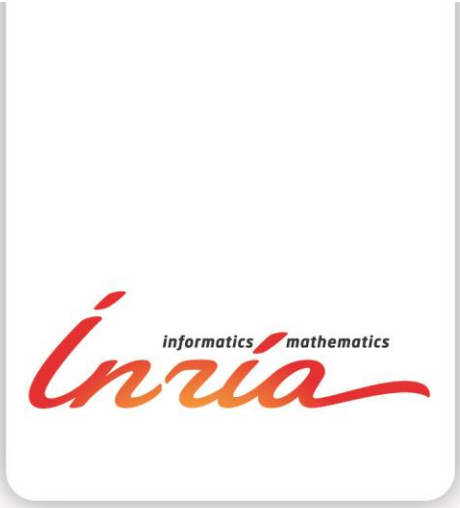

GigaVoxels, RTIGE

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Project-Teams Maverick

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Abstract: This the work done during the RTIGE ANR.

Key-words: insérez ici les mots-clés en anglais

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GigaVoxels, RTIGE

Résumé : Ceci est le guide de programmation de la librairie GigaVoxels.

Mots clés : insérez ici les mots-clés en français

1. Introduction

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1. Sphere Ray-Tracing

In certain regions of space, a very few number of stars can occur. In the kind of associated bricks, the ray-marching algorithm could be very costly, because each ray will step inside the brick into lots of void and empty regions. The idea could be to replace this algorithm due to a alternate representation of the problem. It could be interesting to test real ray-tracing of spheres.

In the data production management process, instead of producing voxels, we generate stars positions that we store in the first voxels with their count.

Then , in the rendering part, we replace the ray-marching process by ray-tracing of spheres. First, we retrieve the total number of stars of the brick, then we iterate through theses stars to do ray-tracing of spheres.

1. VBO generation

Rendering of a huge number of points in OpenGL could be costly especially when zooming inside the galaxy, all the points are traversing the graphics pipeline.

The idea could be to only generate part of VBO stars in visible bricks.

So, first, the data production management system would be responsible for producing positions of stars and stores them in voxels with their total numbers.

The rendering part is nor involved in this process. Instead, a new pass will be necessary to dump the only visible parts of the VBO on the fly.

Conclusion

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