GigaSpace, getting started guide for Microsoft Windows

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GigaSpace, getting started guide for Microsoft Windows

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Abstract: This the programming guide of the GigaVoxels library.

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

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GigaSpace, getting started guide for Microsoft Windows

Résumé : This is the GigaVoxels library programming guide for developers. It is an deep insight for make benefit glorious nation of voxels worshipers.

Mots clés : insérez ici les mots-clés en français

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I. Introduction

This is a sample document for the INRIA RT Word model. Page headers/footers are automatically updated with the information you fill in the File/Properties/Summary (Fichier/Propriétés/Résumé) box. Mandatory fields are Title and Author.
Use automatic references for sections, tables and figures. Refer to section **Erreur ! Source du renvoi introuvable.** for reference examples.

1. System Requirements

To use GigaSpace on your system, you will need the following installed:

- A CUDA-capable GPU (with at least Compute Capability 2.0)
- A supported version of Microsoft Windows
- A supported version of Microsoft Visual Studio
- The NVIDIA CUDA Toolkit (available at http://developper.nvidia.com/cuda-downloads)

The next two tables list the currently supported Windows operating systems and compilers.

Table 1 Windows Operating System Support with GigaSpace 1.0

Operating System	Native x86_64	Native x86_32	Cross (x86_32 on x86_64)
Windows 7	YES	-	YES

Table 2 Windows Compiler Support with GigaSpace 1.0

Compiler	IDE	Native x86_64	Native x86_32	Cross (x86_32 on x86_64)
Visual C++ 11.0	Visual Studio 2012	-	-	-
Visual C++ 10.0	Visual Studio 2010	YES	-	YES
Visual C++ 9.0	Visual Studio 2008	YES	-	YES

2. Dependencies

Plus, for the Library:
Toutes les dépendances (librairies externes) dont on a besoin sont disponibles sous Ubuntu 12.4 (packages officiels) à part une seule, CUDPP. Sous Linux, les gens vont devoir recompiler eux-mêmes

Cudpp (pas de package offiiciel pour l'instant). Mais il y a une ligne a modifer dans le Makefile de CUDPP pour choisir une carte graphique récente... Cyril Soler s'est proposé d'étudier la faisabilité et de m'aider à faire un package debian (installeur automatique). Sous Windows je sais faire.

a) LIBRARY

Here is the list of depdendencies required for the library :

Table 3 List of dependencies for core library

Libraries	Version	Goal
Cuda	6.0	GPU computing
cudpp	2.1	Parallel algorithms on GPU
Loki	provided (modified)	C++ template design pattern
OpenGL	system	3D library
glew	1.10.0	OpenGL extensions (OpenGl 4.4)
glu	system	May be removed in the future...
freeglut	xxx	May be removed in the future...
glm	xxx (0.9.5.x)	vector/matrix maths (and OpenGL 4.x)

We provide :

LOKI

available here : http://loki-lib.sourceforge.net/

A few classes have been modified (1 or 2 classes) to be able to use tuples on GPU (for field selection in tuples).

GLM

Available here : http://glm.g-truc.net/0.9.5/index.html

We may use it more and more to be more OpenGL 4.x compliant in the futur

=> but maybe GLM has a developper package on Linux ?

But, you will need :

- [OpenGL] and [GLU]
- [freeglut]
- [CUDA 6.0] . One guy uses it on Linux. It's not working on Windows, NVCC problems with C++ template...)

=> And "for the moment" we also need the "Samples" in its GPU Computing SDK (you can install it after CUDA if you hadn't done that). We rely on 1 file of the SDK for operations on float3, float4...

GLEW

http://glew.sourceforge.net/

=> check for the lastest one if you need, build it and installed (you can install it in a local directory)

You'll also need Cudpp, but wait before compiling it. I need your "graphics card" model.

- [CUDPP] : http://code.google.com/p/cudpp/

= > Actually, our main problem is with cudpp that you need to build. There is no package...

=> By checking website, I've just seen that a new version has been released and they pass from GoogleCode to Github...

=> IMPORTANT : I need your graphics card model to eventually change the Makefile. If you are using a SM 3.0 compute capability graphics card, you need to change the Makefile.

b) Tools

Here is the list a required tools to build the libraries, tools, etc...

Table 4 List of tools for core library

Libraries	Version	Goal
CMake	xxx (2.8.x)	Multi-plateforme project generation
Doxygen	xxx	Automatique documentation
7-zip	xxx	Compression/decompression

c) Demos / examples

Here is the list a required dependencies to launch demos :

d) Table 5 List of tools for core library

Libraries	Version	Goal
Qt	4.7.4 (soon 4.5.2)	User Interface and 3D window
QGLViewer	2.x.x (soon 2.5.2)	Specialized 3D window
Qwt	6.x.x (6.x.x)	2D Plots
Assimp		3D models import
CImg		Image/texture support
ImageMagick		Image/texture support

You will need : (on Ubuntu 12.4 all are available in standard developper packages)

- [Qt]

=> we use 4.7 on Linux, the one from official Ubuntu 12.4 package. We do that because, on Windows, 64 bits support had been stopped and it crashes. Maybe the Qt 5 is OK, but not in Ubuntu...

- [QGLViewer] : http://www.libqglviewer.com/
- assimp : http://assimp.sourceforge.net/

=> load 3D models

- [CImg] : http://cimg.sourceforge.net/

=> we only need the CImg.h file for image/texture support.

- [ImageMagick] : http://www.imagemagick.org/script/index.php

=> image/texture support.

=> don't forget to install the SDK with headers C++ files (on Windows the installer asks for it, but on Linux I don't remember, I think it's OK)

- [Qwt] : http://qwt.sourceforge.net/

=> plots

3. About this document

This example show the usage of a GPU producer used to generate a simple sphere.
The main themes related to volume rendering are :

- procedural geometry
- color alpha-premultiplication (to avoid color bleeding)
- shading model (lambert illumination model)

II. Installing GigaSpace Development tools

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1. System Requirements

show the usage of a GPU producer
GvIRenderer = interface are prefixed with I
int pLevel = function parameters are prefixed with "p" standing for "parameter"
int level : local parameters are left unchanged.
int pLevel = template parameters are prefixed with "T" standing for "template"

2. About this document

This example show the usage of a GPU producer used to generate a simple sphere.
The main themes related to volume rendering are :

- procedural geometry
- color alpha-premultiplication (to avoid color bleeding)
- shading model (lambert illumination model)

Conclusion

Reference updates are not always automatic, and you may have to force a refresh. To do so, select the whole document (Ctrl+A) and press F9 (or find the equivalent in the menu). Printing the document also usually refresh all fields (including header/footer).

If you need help about this Word model, you can contact anne.bres@inria.fr.

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