SDK CODE SAMPLE GUIDE TO NEW FEATURES IN CUDA TOOLKIT v4.1

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Application Note

OVERVIEW OF NEW FEATURES

NVIDIA® CUDA™ Toolkit version 4.1 introduces some exciting new features and capabilities. To illustrate the capabilities and advantages of the new features, the CUDA SDK includes many new and improved code samples. In addition, existing code samples have been upgraded to take advantage of the new features. This document serves as a guide to the new SDK code samples as they relate to the new CUDA Toolkit Version 4.1 and Version 4.1 feature list.

CUDA TOOLKIT 4.1 HIGHLIGHTS

- Easier application porting
  - Support for CubeMap Texture fetches, 3D Texture Reads, and 3D Surface Writes (Requires hardware based on NVIDIA® Fermi Architecture).
  - GPU kernels can assert (Requires hardware based on NVIDIA® Fermi Architecture).
  - 1000+ new NPP image/video processing library.
- Faster multi-GPU programming
  - Unified virtual addressing
  - GPUDirect v2.0 with peer-to-peer communication (applicable to Quadros and Tesla GPUs based on GF100 and GF110)

Code Samples

MersenneTwisterGP11213 (New!)

This sample implements Mersenne Twister GP11213, a pseudorandom number generator using the CURAND library.

HSOpticalFlow (New!)

When working with image sequences or video it's often useful to have information about objects movement. Optical flow describes apparent motion of objects in image sequence. This SDK sample is a Horn-Schunck Method for Optical Flow written using CUDA.

volumeFiltering (New!)

This sample demonstrates basic volume rendering and filtering using 3D Textures.

simpleCubeMapTexture (New!)

This SDK sample demonstrating how to use *texcubemap* fetch instruction in CUDA C program.

simpleAssert (New!)

This SDK sample demonstrating how to use GPU assert in a CUDA C program.

NPP

For additional information about NPP, please refer to the document NPP_Library.pdf included with the CUDA toolkit.

grabcutNPP (New!)

CUDA Implementation of Rother et al. GrabCut approach using the 8 neighborhood NPP Graphcut primitive introduced in CUDA 4.1. (C. Rother, V. Kolmogorov, A. Blake. GrabCut: Interactive Foreground Extraction using Iterated Graph Cuts. ACM Transactions on Graphics (SIGGRAPH'04), 2004).

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