Introduction to OpenCL

Course No. 1908   **Duration: 1 Day**

Course overview:

This course explains the OpenCL standard for parallel computing when using different types of processors, DSPs and in particular graphics adapter cards such as NVIDIA, AMD and Intel.

The course presents OpenCL within the framework of other relevant parallel computing graphics adapter card standards and as a part of the Khronos standards.

The course will also outline parallel processing capabilities when coding video.

Who should attend?

Developers and product managers in Start-ups providing parallel computing and video services and who want to understand OpenCL.

Prerequisites:

Basic understanding of video compression and transfer. Knowledge of C / C++.

Course Content:

1. Introduction to parallel computing
- Processing methods: SISD, SIMD, MIMD, Parallel
- Efficiency of parallel processing
- Parallel processing and video coding
- Review of past forum and standards (OpenMP, GPGPU, DirectCompute etc)

2. Khronos Standards
- Interoperability issues
- OpenGL, OpenGL ES, OpenMAX
- OpenSL, OpenCL
- Industry adaptation and usage in mobile OS/Devices

3. OpenMAX and video coding
- OpenMAX standard
- OpenMAX layers
- Industry adaptation

4. OpenCL – 4 hours
- Overview
- Devices
- Processing Architecture
- Memory Resource (Shared, private)
- Events & Synchronization

5. CUDA and OpenCL
- CUDA pros cons in comparison to OpenCL
- Main differences review

6. Host coding sample

7. GPU Coding samples
- C99 and kernel programing
- Review of Kernel program
  - o   DCT Kernel
  - o   Video processing transform

8. Summary