EdelTech chooses CUVILib to offer real-time 2k film scanning.

Case Study

TunaCode
Software for Personal Supercomputers

.edeltech

CUVILib

Overview

EdelTech's AgiScan utilizes CUVILib to add GPU accelerated Imaging functionality, enabling real-time performance on film-scanning and post-processing.

"Thanks to the CUVI GPU acceleration library we could add real time 2k image processing to our film scanning application without writing one single line of GPU code. Previously, we had to use a 12-core Xeon machine."

-Jean-Pierre Gehrig, CEO EdelTech.

Company Overview

Edeltech, alongwith MWA Nova, provides high resolution film scanning solutions to archives internationally to digitize and restore old movies.

Tunacode's GPU experts implemented AgiScan's image processing pipeline in no time. The integration of the CUVI library in our C++ application was really easy, they took care of all the GPU heavy lifting for us.

Challenge – Achieve real-time performance on 2K video processing

The key challenges for 2k video processing can be divided into two categories; bandwidth bottleneck and processing constraints. Firstly, due to large uncompressed frames, it becomes difficult to sustain the high bandwidth of up to 30frames/sec. This results in low frame rates and stuttering.

Secondly, applying various transforms and conversions on more than 8 million pixel per frames in real-time is a tremendous task. There could be as many as 10 different operations including demosaicing, convolutions and image transforms on each frame in the pipeline constricting the processing times to only a few milliseconds which becomes difficult to achieve in most image processing solutions.

Most current solutions achieve the acceptable figures using clusters or custom designed systems that significantly increase system cost, complexity and power requirements.

Solution – CUVILib

Edeltech discovered TunaCode's CUVILib. "GPUs" have proven to be not just a buzz-word but a disruptive technology, offering cost-effective, energy efficient performance. Engineers at TunaCode have built and perfected CUVILib, fine-tuned for different GPU architectures. The beauty of CUVILib lies not in the complex, fine-tuned GPU code but in the abstraction that it offers from it. No prior knowledge of GPU programming is needed to accelerate Imaging applications on GPUs which enabled Edeltech to easily add GPU support in AgiScan.

Implications

Implications of adding GPU support through CUVI are two-fold. First, Edeltech increased the performance of their film-scanning application which was barely real-time without CUVI. Previously, the application could barely "process" at 25fps but not "record" or "preview". With CUVI, AgiScan's users can now scan, process and preview in real-time which reflects in added user experience. Next, Edeltech achieved significant reduction in hardware cost. Previously, each AgiScan machine consumed 2 Intel Xeon processors at full capacity for processing alone. With CUVI, AgiScan now uses an Intel Core i7 (only 30% CPU consumption) with a NVIDIA GeForce GTX580 available off-the-shelf. That's more than 1/3rd reduction in cost per machine.