

Optimizing MPEG Encoding

Jin Wen Ting, *Roel Deckers*

Uppsala University

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The Problem

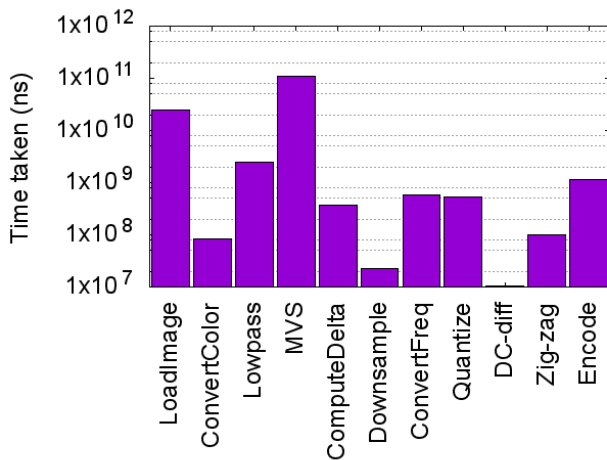


Figure: Acces pattern for a single tile. Order in blue, dependant iterations in red.

Key Optimizations

- ▶ Load a images from disk in the background,
- ▶ Use shared global memory for the GPU and CPU using *clEnqueueMapBuffer*¹,
- ▶ Perform everything up to and including motion vector search on the GPU, combining as much as possible
- ▶ Optimize encoding on the CPU.

¹This may however be bugged...

MVS: Our approach

$(-1,-1)$ 1	$(0,-1)$ 2,1	$(1,-1)$ 2
1	2	
$(-1,0)$ 3,1	$(0,0)$ 3,2,1	$(1,0)$ 4,2
3	4	
$(-1,1)$ 3	$(0,1)$ 3,4	$(1,1)$ 4

Figure: Acces pattern for a single tile. Order in blue, dependant iterations in red.

Open questions

- ▶ At what point in the pipeline is it best to switch back to CPU?
- ▶ How flexible are the SIMD units on intel GPUs?
- ▶ What is the ideal number of tiles to process in one workgroup?