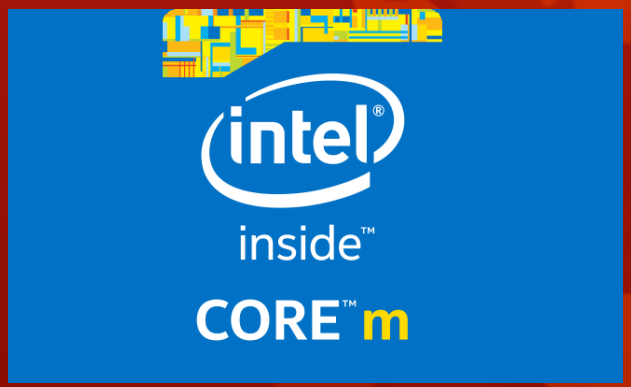
OpenCL 2.0!!!

Saddam Quirem



Background

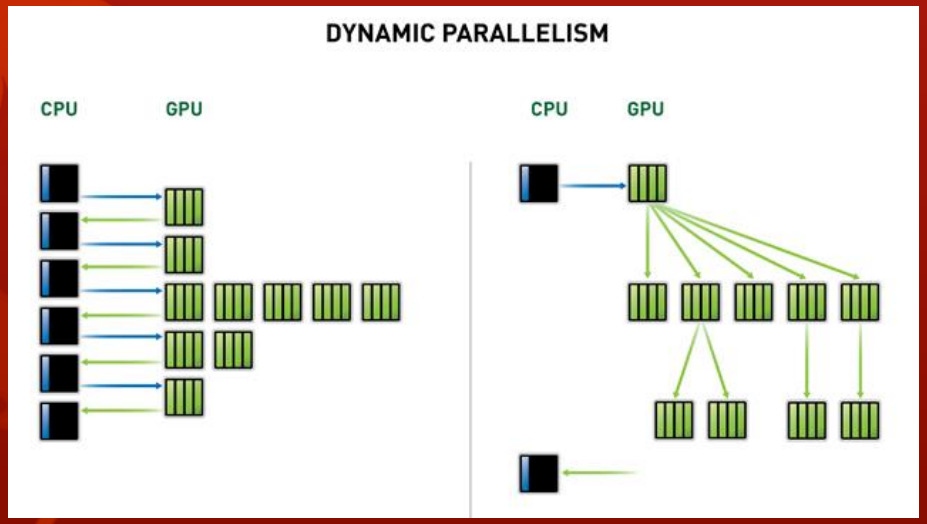
- Open heterogeneous language
- Designed w/ massively parallel computing in mind (GPUs)
- Scientific Computing, DSP, DIP, etc.
- Trademark owned by Apple Inc.
- Main competitor is CUDA

Company	Product	OpenCL Suport
Altera	V Series	1.0
AMD	**GCN**	**2.0**
Apple	Mac OS	1.2
ARM	Mali	1.1
Imagination	PowerVR	1.2
Intel	**Broadwell**	**1.2/2.0**
NVIDIA	CUDA	1.1
Qualcomm	Adreno	1.2
Vivante	Vega	1.2

New Features

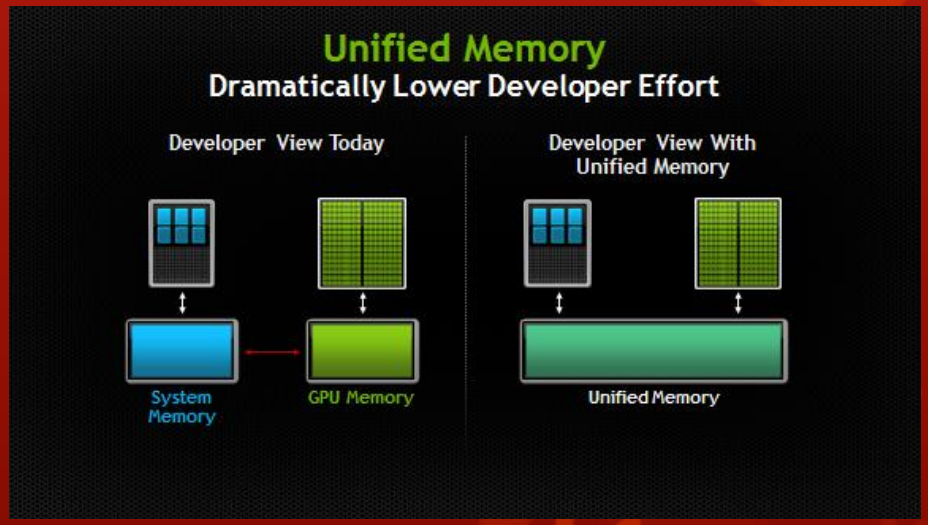
Dynamic Parallelism

- Device-side kernel calls
- Greater SIMD and memory efficiency in unstructured application



Shared Virtual Memory

- Host and device can now share the address space



New Features

C11 Atomics

- OpenCL 2.0 follows the C11/C++11 memory model

Pipes

- Device kernels can shared data using FIFO data structures

Generic Address Space

- Kernel arguments no longer need to specify state space: _global, _shared, _constant

Image Features

- Support for 3D image writes
- sRGB images

References

- Jin Wang and Sudhakar Yalamanchili. "Characterization and Analysis of Dynamic Parallelism in Unstructured GPU Applications." *2014 IEEE International Symposium on Workload Characterization (IISWC).* October 2014.
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