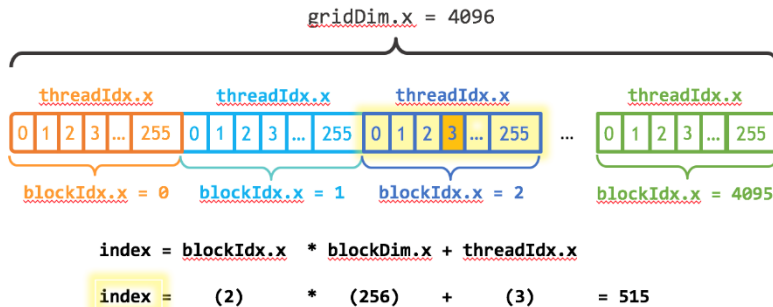
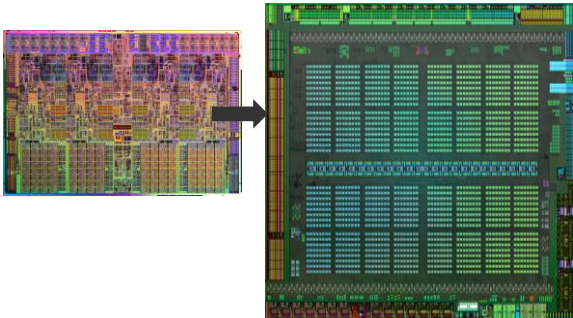


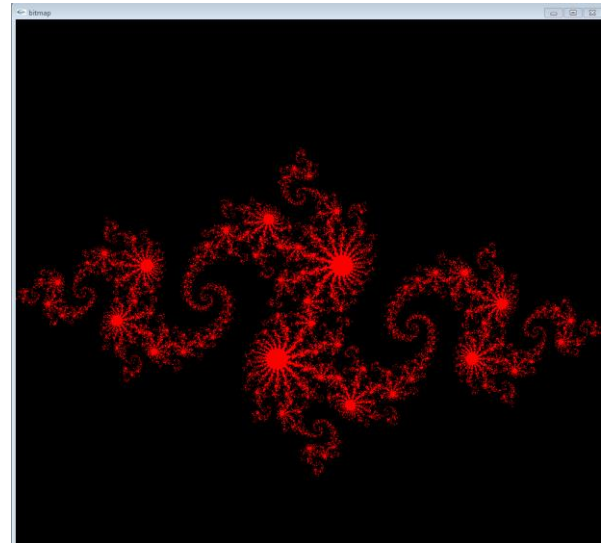
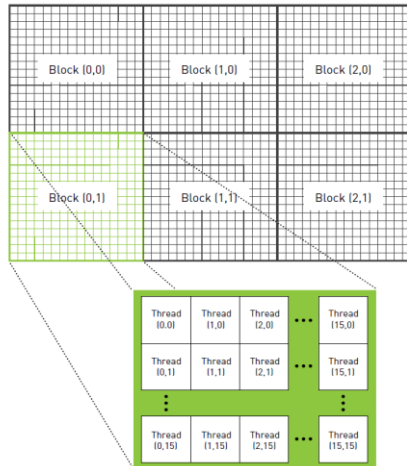
Course Schedule

- Day 1:
 - Lecture 1: Intro to parallel programming and GPGPU evolution
 - Lecture 2: Introduction to CUDA
 - Hands-on lab 1: Vector addition: CUDA C/C++



Course Schedule

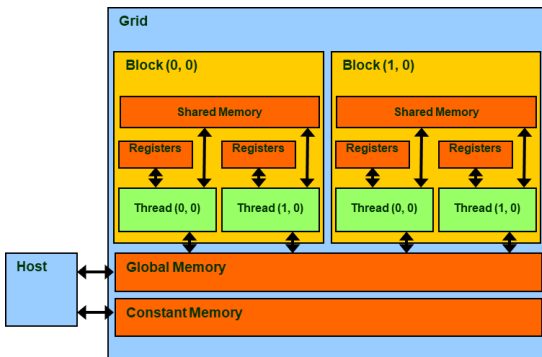
- Day 2:
 - Lecture 3: CUDA threads & performance considerations
 - Lecture 4: CUDA Memories
 - Hands-on lab 2: Julia Set CUDA/C++



Course Schedule

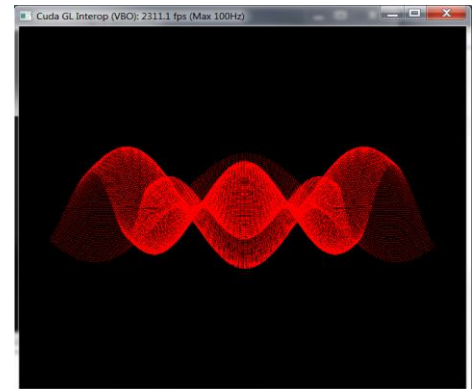
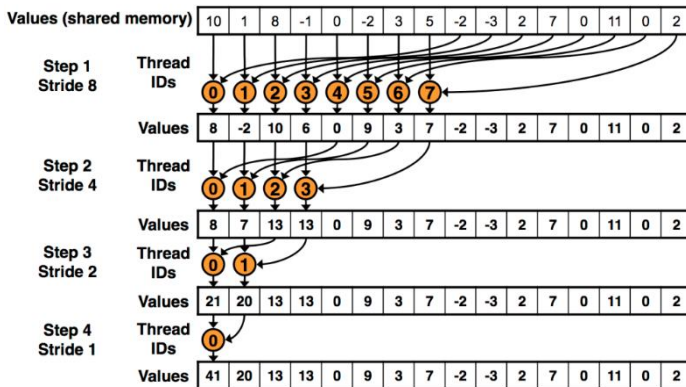
– Day 3:

- Lecture 5: CUDA Memories (II)
- Lecture 6: CUDA compiling tools & debugging
- Hands-on lab 3: Image processing: Median filter. CUDA/C++



Course Schedule

- Day 4:
 - Lecture 7: Parallel operation on the GPU
 - Lecture 8: CUDA/OpenGL interoperability
 - Hands-on lab 4: Parallel Reduction CUDA/C++
 - Hands-on lab 5: CUDA/OpenGL interoperability



Course Schedule

– Day 5:

- Lecture 9: CUDA libraries & CUDA Applications
- Lecture 10: GPU Technology trends & research problems
- Hands-on lab 6: ZAXPY operation using Thrust

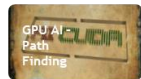
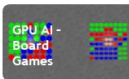
Linear Algebra
FFT, BLAS,
SPARSE, Matrix



Numerical & Math
RAND, Statistics



Data Struct. & AI
Sort, Scan, Zero Sum



Visual Processing
Image & Video



$$z = ax + y$$

x, y, z : vector
 a : scalar

Course Goals

- Learn how start programming parallel computing systems such as GPUs using CUDA
- Learn about the CUDA programming model
 - Parallel programming API, tools and techniques
 - Processor architecture features and constraints
- Learn about CUDA memories
 - Memory hierarchy
 - CPU vs GPU (comparison)
- Parallel Patterns
 - Parallel reduction, sort, scan, gather, scatter, ...
- Learn about advanced CUDA features
 - Multi-GPU, Unified Memory, Dynamic parallelism
- CUDA libraries & applications
 - Computer Vision applications
- How to organize your CUDA projects
 - Mix CUDA with other libraries such as OpenGL, OpenCV, etc

Repository

- All lectures, code, and more:

<https://github.com/3dperceptionlab/cuda-workshop-2019>