

GPU Programming 2019/2020

Introduction

Christian Lessig

Course

- Lectures: Tuesdays, 11:00 - 13:00
- Tutorials: Wednesdays, 15:00 - 17:00, 426
Thursdays, 11:00 - 13:00, 426
- Office hours: Thursdays, 13:00 - 14:00
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- Website: `http://http://graphics.cs.uni-magdeburg.de/teaching/2019/gpu/index.html`

Course

- Tutorials:
 - › Sign up for one of them
- Assignments:
 - › required for exam admission
 - › 4 assignments
- Exam:
 - › oral examination

What the course is about

- + Principles of parallel programming
- + Types of parallelism
- + How to efficiently implement algorithms on (data-) parallel architectures

What the course is *not* about

- APIs (neither graphics nor general purpose)
- Formal parallel programming
- Image generation / rendering

Course outline

- Fundamentals of parallel programming
 - › Programming exercises with C++ threads
- Data-parallel processors
- Programming data-parallel processors using CUDA

What are your expectations
and objectives?

Literature

- J. L. Hennessy and D. A. Patterson, *Computer architecture: a quantitative approach*, fourth edition, Morgan Kaufmann, 2007.
- M. D. McCool, J. Reinders, and A. Robison, *Structured parallel programming: patterns for efficient computation*. Elsevier/Morgan Kaufmann, 2012.
- J. Sanders and E. Kandrot, *CUDA by example: an introduction to general-purpose GPU programming*, Addison-Wesley, 2011
- D. Kirk and W.-m. Hwu, *Programming massively parallel processors*. Elsevier/Morgan Kaufmann, 2013.
- *CUDA programming guide*, NVIDIA, 2016.