

# Practical GPU Programming

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Computing**

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**[http://www.speedup.ch/workshops/w38\\_2009.html](http://www.speedup.ch/workshops/w38_2009.html)**

# About this tutorial

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- **Lecture and hands-on sessions**
- **Sessions 1 and 4: Generic**
- **Sessions 2 and 3: NVIDIA CUDA**
- **Hands-on sessions assume no prior knowledge of CUDA**
- **Lots of time for Q&A**

# Outline

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- **Session 1: GPU basics (9:00 -- 10:30)**
  - Why GPUs? (Robert)
  - Programming environments and ready-to-use GPU libraries (Dominik)
  - GPU architecture (Dominik)
- **Session 2a: CUDA basics (10:45 -- 11:30)**
  - Introduction to NVIDIA CUDA (Christian)
  - CUDA parallel programming model and C for CUDA (Christian)
- **Session 2b: Hands-on CUDA (11:30-12:15)**
  - Guided tour through simple CUDA programs

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- **Session 3a: Advanced CUDA (13:15 -- 14:15)**
  - Optimizing performance (Christian)
- **Session 3b: Hands-on CUDA (14:15 -- 15:15)**
  - Get your hands dirty
  - Introduction to Profiler and Debugger
- **Session 4: Scientific computing (15:30 -- 16:30)**
  - Aspects of scientific computing on GPUs (Robert)
  - GPU cluster computing primer (Dominik)
- **Wrap-up and discussion**