Lec o Course Outline

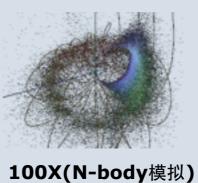
Dong Li, Tonghua Su

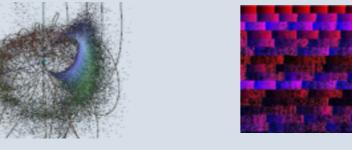
School of Software Harbin Institute of Technology

CUDA Worldwide

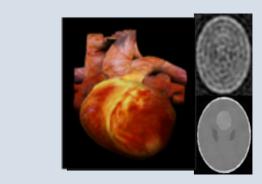
●自2007年,全球700多个高校开设课程 ●GPU+CUDA成为最有潜力的加速器之一

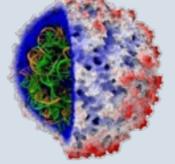












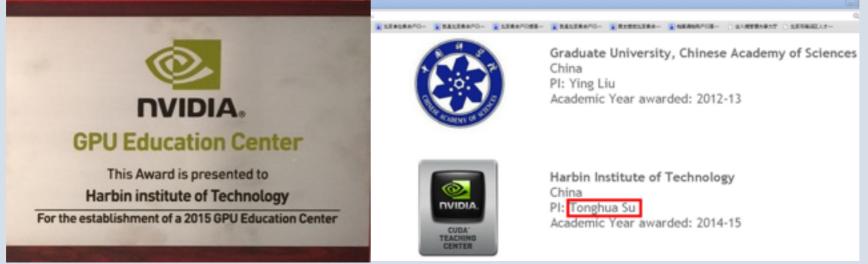
110-240X(分子模拟)

13-457X(MRI断层重构)

35X(基因组匹配)

CUDA @ HIT

●英伟达GPU教育中心(since 2014)



✓ 2015全国最佳GPU教育中心



Tonghua Su, School of Software, Harbin Institute of Technology, China

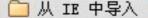
CUDA @ HIT

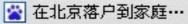
●英伟达GPU研究中心认证(since 2014)

blogs.nvidia.com/blog/2014/11/12/durham-university-new-cuda-centers/

上海电子信息职业…







New CUDA Research Centers

CUDA Research Centers embrace GPU computing across research fields researchers and academics, an NVIDIA technical liaison and specialized addition to Durham, include:

- Hamburg University of Technology (Germany)
- Harbin Institute of Technology (China)
- Indian Institute of Technology, Roorkee (India)
- Khmelnytskyi National University (Ukraine)
- Michigan Technological University (U.S.)
- Pontificia Universidad Católica del Perú (Peru)
- Purdue University (U.S.)
- Riga Technical University (Latvia)
- Singapore Management University (Singapore)



CUDA @ HIT

●CUDA创新实验课(Since 2012)

- ✓ 2013秋季学期
 - 60人报名,录取32人,15人证书
- ✓ 2014秋季学期
 - 66人报名,录取33人,22人证书
- ✓ 2015秋季学期
 - 70+报名,录取42人上课





课程内容

●讲授分六专题

- ✓ Lec 1 Hello CUDA
- **✓ Lec 2 GPU Hardware Architecture**
- **✓ Lec 3 CUDA Software Abstraction**
- **✓ Lec 4 Memory Hierarchy**
- **✓ Lec 5 CUDA Debugging & Profiling**
- **✓ Lec 6 Reduction & Scan**

实验内容

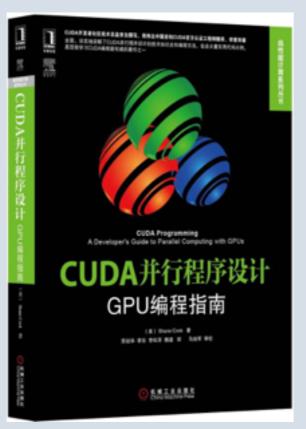
●实践为主

- ✓ 4个基本实验(分值40%)
- **✓ 1**个创新项目(分值**50**%)

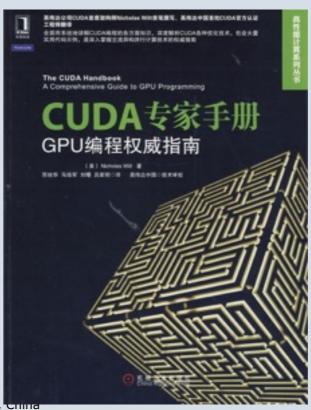
序	实验项目名称	类型	学	每组人数	主要仪器设备
1	CUDA简单内核编写 错误处理	验证	3	1	配有英伟达显卡的计算机
2	CUDA调度原理分析 距离计算内核编程	设计	3	1	配有英伟达显卡的计算机
3	蒙特卡罗模拟CUDA求解 有限差分方程的CUDA求解	设计	3	1	配有英伟达显卡的计算机
4	CUDA归约算法设计与优化	设计	3	1	配有英伟达显卡的计算机
5	自选题目的CUDA创新项目	综合	12	3	配有英伟达显卡的计算机或Jetson开发板

参考书

✓ Shane Cook, CUDA Programming
-- A Developer's Guide to Parallel
Computing with GPUs, 2013. (中文
版: 《CUDA并行程序设计: GPU编程指
南》, 机械工业出版社, 2014.1)



✓ Nicholas Wilt, The CUDA Handbook -- A Comprehensive Guide to GPU Programming, 2013.(中文版:《CUDA专家手册: GPU 编程权威指南》, 机械工业出版社, 2014.8)



Tonghua Su, School of Software, Harbin Institute of Technology, Crima

参考资源

- ●哈工大《CUDA高性能并行程序设计》课程
 - √ https://cms.hit.edu.cn/course/view.php?id=424
 - ✓ 选课密码: CUDA
- ●NVIDIA CUDA初级教程视频
 - ✓ http://www.iqiyi.com/a_19rrhbvoe9.html#vfrm=2-3-0-1