CART CENTER FOR ADVANCED RADIOTHERAPY TECHNOLOGIES UCSD

Short Course on

GPU Programming for Medical Physics and Medical Imaging Research

Sponsor

Center for Advanced Radiotherapy Technologies, University of California San Diego (UCSD)

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Course Director

Steve Jiang, Ph.D., Associate Professor, Center for Advanced Radiotherapy Technologies, UCSD

Course Co-director

Amitava Majumdar, Ph.D., Associate Professor, San Diego Supercomputer Center, UCSD

Course Description

Recent advances in general purpose GPU computing have revealed a tremendous computing power for solving computationally intensive tasks in scientific computing. In particular, a number of computation tasks in medical physics and medical imaging have been sped up by a large factor on the GPU architecture. Yet, due to the special hardware architecture and programming environment, the programming on GPU are much more complicated than on CPU and requires more efforts.

This 2-day GPU programming course, delivered by researchers at the Center for Advanced Radiotherapy Technologies (CART), San Diego Supercomputer Center (SDSC), and Department of Computer Science and Engineering at UCSD, is designed to give researchers an initial boost in learning GPU programming, with an emphasis on solving medical physics and imaging related problems. Participants will learn basic CUDA programming as well as code optimization techniques. The course will seamlessly integrate comprehensive lectures and hands-on practical labs, through which participants will be able to understand concepts of GPU programming and master basic programming skills. Detailed lecture notes and a number of sample codes for solving realistic problems in medical physics and imaging will be provided. Previous programming experience with C/C++ language is a prerequisite. Working knowledge on Unix/Linux-based system is expected for lab sessions.

The course will emphasize hands-on experience. It will take place in a well-equipped computer training classroom at SDSC. Each student will have his/her own desktop computer. Every two students will have exclusive access to a dedicated NVIDIA Tesla GPU card and an instructor. All the course materials will be available to students. Some GPU codes developed at CART will be provided to students.

Registration

To facilitate hands-on experience, enrollment will be limited to 19 people. Registration will be strictly on a first come basis. The course registration fee is $1500 for early birds and $1,800 for standard, which covers the facility rental, course materials, 2 lunches, 1 dinner, 1 happy hour, and refreshments. Graduate students, postdoctoral fellows, and residents will be given a discount.

Contact

For more detailed information about the course, please contact the course director:

Steve Jiang, Ph.D.
Tel: (858)822-5129
Fax: (858)822-6078
E-mail: sbjiang@ucsd.edu

For registration and detailed information, please go to:
http://radonc.ucsd.edu/Research/CART/GPU_Course.asp