Summer School in e-Science with Many-Core CPU/GPU Processors - June 2010

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The Summer School in e-Science with Many-Core CPU/GPU Processors (website will soon be available at http://advcomp.di.uminho.pt/uta/mcss2010/) is planned for the 3rd week of June in Braga, Portugal, and is the first course in Europe given by two NVIDIA senior members and a Professor from University of Illinois at Urbana-Champaign. David Kirk is an NVIDIA Fellow and served from 1997 to 2009 as NVIDIA's chief scientist, a role in which he led the development of graphics technology for today’s most popular consumer entertainment platforms. He recently published a book entitled “Programming Massively Parallel Processors: a hands-on approach”, together with Wen-mei Hwu (see below), addressing the concepts of many core parallel programming and GPU architecture.

Wen-mei W. Hwu is the Walter J. ("Jerry") Sanders III-Advanced Micro Devices Endowed Chair in Electrical and Computer Engineering in the Coordinated Science Laboratory of the University of Illinois at Urbana-Champaign. From 1997 to 1999, Dr. Hwu served as the chairman of the Computer Engineering Program at the University of Illinois.

Michael Garland is currently a research scientist with NVIDIA Research and an adjunct professor in the Department of Computer Science at the University of Illinois, Urbana-Champaign.

The Summer School will also have other experts in Graphics Computing and from other Scientific Computing areas, to present their views and experiences in using CUDA in the development of their libraries or scientific applications.

The tentative schedule is as follows:

Monday, 14th June:
09h00 - 09h10 Welcome by Alberto Proença and Keshav Pingali
09h10 - 11h00 Beginner's Tutorial on Many-Core Processors, Multi-Core Processors, and C Programming, Michael Garland, NVIDIA
11h00 - 11h15 Break
11h15 - 12h30 Introduction to Many-Core Processors, David Kirk, NVIDIA
12h30 - 14h00 Lunch
14h00 - 14h30 Rapid-fire session (each participant presents himself)
14h30 - 16h00 Introduction to CUDA, Wen-Mei Hwu, University of Illinois U-C
16h00 - 16h30 Break
16h30 - 18h00 Multidisciplinary Panel (with application experts, to introduce their talks later on; to be confirmed)

Tuesday, 15th June:
09h00 - 11h00 CUDA Threading Model & CUDA Memory Model, David Kirk, NVIDIA
11h00 - 11h15 Break
11h15 - 12h30 Algorithm Design for Many-Core GPUs, Michael Garland, NVIDIA
12h30 - 14h00 Lunch
14h00 - 16h00 Hands-on lab classes
16h00 - 16h30 Break
16h30 - 18h00 Multiple GPU's in a MPI cluster, Wen-Mei Hwu, University of
Illinois U-C

Wednesday, 16th June:
09h00 - 11h00 CUDA Performance Considerations, Wen-Mei Hwu, University of
Illinois U-C
11h00 - 11h15 Break
11h15 - 13h00 CUDA and Higher-level Tools, Libraries and Software Resources, Michael Garland, NVIDIA
13h00 - 14h30 Lunch
14h30 - 16h30 Teacher track (to discuss how to best use the textbook, resource sites, and labs)
16h30 - 18h00 Leisure Time

Thursday 17th June:
09h00 - 10h00 Case Study 1 (topic: to be defined)
10h00 - 11h00 Case Study 2 (topic: to be defined)
11h00 - 11h15 Break
11h15 - 12h30 Case Study 3 (topic: to be defined) plus Demos
12h30 - 14h00 Lunch
14h00 - 16h00 Hands-on lab classes
16h00 - 16h30 Break
16h30 - 18h00 Keynote Talk with discussion

Friday, 18th June:
09h00 - 10h00 Case Study 4 (topic: to be defined)

10h00 - 11h00 Project proposals, Part 1 (short presentations about how attendees would CUDA-ize their applications, followed by discussion and suggestions)
11h00 - 11h15 Break
11h15 - 12h15 Project proposals, Part 2
12h15 - 12h30 Closing Session
12h30 - 14h00 Lunch

For additional information please send an e-mail to mcss2010@di.uminho.pt