

PUMPS Summer School

The Barcelona Supercomputing Center (BSC) in association with Universitat Politècnica de Catalunya (UPC) has been awarded by NVIDIA as a CUDA Center of Excellence (CCOE). BSC and UPC currently offer a number of courses covering CUDA architecture and programming languages for parallel computing. Please contact us for possible collaborations.

The sixth edition of the Programming and Tuning Massively Parallel Systems summer school (PUMPS) is aimed at enriching the skills of researchers, graduate students and teachers with cutting-edge technique and hands-on experience in developing applications for many-core processors with massively parallel computing resources like GPU accelerators.

- *Summer School Co-Directors:* **Mateo Valero** (BSC and UPC) and **Wen-mei Hwu** (University of Illinois at Urbana-Champaign)
- *Local Organizers:* Nacho Navarro and Victor Garcia (BSC and UPC)
- *Dates:*
 - Applications due: **May 15, 2015**
 - Due to space limitations, early application is strongly recommended. You may also be suggested to attend an online prerequisite training on basic CUDA programming before joining PUMPS.
 - Notification of acceptance: **May 30, 2015**
 - Summer school: **July 6-10, 2015**
- *Location:* Barcelona Supercomputing Center, Computer Architecture Dept. at Universitat Politècnica de Catalunya, Barcelona, Spain
- *Organized by:*
 - Barcelona Supercomputing Center ([BSC](#))
 - University of Illinois at Urbana-Champaign ([University of Illinois](#))
 - Universitat Politècnica de Catalunya ([UPC](#))
 - HiPEAC Network of Excellence ([HiPEAC](#))
 - PUMPS is part of this year [PRACE Advanced Training Centre program](#)
- *Topics:*
- The following is a list of some of the topics that will be covered during the course. The updated full program will soon be available
 - CUDA Algorithmic Optimization Strategies
 - Dealing with Sparse and Dynamic data
 - Efficiency in Large Data Traversal
 - Reducing Output Interference
 - Controlling Load Imbalance and Divergence
 - Acceleration of Collective Operations
 - Dynamic Parallelism and HyperQ
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Debugging and Profiling CUDA Code

- Multi-GPU Execution
- Introduction to OmpSs and to the Paraver analysis tool
- [OmpSs](#): Leveraging GPU/CUDA Programming
- Hands-on Labs: CUDA Optimizations on Scientific Codes. OmpSs Programming and Tuning.

- [Instructors](#):

- Distinguished Lecturers: **Wen-mei Hwu** (University of Illinois at Urbana-Champaign) and **David Kirk** (NVIDIA Corporation)
- BSC / UPC Teachers: Rosa M. Badia, Xavier Martorell, Xavier Teruel, Nacho Navarro
- Teaching Assistants: Carl Pearson, Simon Garcia de Gonzalo, Javier Cabezas, Marc Jorda, Pau Farre, Diego Marron, Guillermo Miranda, Sergi Mateo, Diego Nieto

- *Prerequisites for the course are:*

- Basic CUDA knowledge is required to attend the course. Applicants that cannot certify their experience in CUDA programming will be asked to take a short on-line course covering the necessary introductory topics.
- C, C++, Java, or equivalent programming knowledge. Skills in parallel programming will be helpful.

Comments:

- *Important Dates:*

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- **Number of attendees is limited** due to classes and labs capacity. We will try to accommodate a reasonable number. Please send your registration soon in order to get a prompt response and a guaranteed seat. Let us know if some circumstance prevents you from attending, so others can get in.
- The summer school is oriented towards advanced programming and optimizations, and thus **previous experience in basic GPGPU programming will be considered in the selection process.** We will also consider the current parallel applications and numerical methods you are familiar with, and the specific optimizations you would like to discuss.

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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