Title and abstract

Workshop or tutorial name along with a brief 150 to 200-word abstract describing the event suitable for the conference web site.

Title: Using OpenACC/HMPP directives to develop and tuned many-core programs

Directive based programming is a very promising technology for dealing with many-core architectures. Emerging standard such as OpenACC(0) are providing a solid ground for users to invest in such paradigm.

In this tutorial we present this technology using OpenACC and HMPP directives as well as companion tools (e.g. for tracing and tuning, for debugging): HMPP Wizard(1), CULA(2), ArrayFire(3), Vampir(4), Paraver(5), Allinea DDT(6), CodeletFinder(7) a novel technology to automatically extract hotspots and corresponding data set from applications to perform offline runtime analysis and auto-tuning (see the joined slides).

We will show how code migration and tuning can be performed. We will describe how accelerated libraries can be integrated seamlessly into applications. Finally, we address advanced issues such the integration of auto-tuning techniques into applications as well as inter-operability to parallel runtime libraries such as StarPU(8).
An overview of the content of this tutorial is available in the joined slides (F. Bodin, invited talk at cc2012 / http://www.etaps.org/)

(0) http://www.openacc-standard.org/
(2) http://www.culatools.com/
(3) http://www.accelereyes.com/products/arrayfire
(4) http://www.vampir.eu/
(5) http://www.bsc.es/computer-sciences/performance-tools/paraver
(6) http://www.allinea.com/products/ddt/
(7) http://www.caps-entreprise.com
(8) http://runtime.bordeaux.inria.fr/StarPU/

**Previous**

If applicable, provide a description of past versions of the activity, including dates, organizers, submission and acceptance counts, attendance, and information with which conference the workshop/tutorial was co-located.

This is a new tutorial that deals with OpenACC as a central technology.

**Why co-locating with PACT**

Brief rationale for the event and for co-locating with PACT.

This subject is central to scientific topics addressed at PACT so we hope to find many people sensitive to the tutorial topic:

- Many-core compilation
- Compilers and tools for parallel computer systems
- Multicore, multithreaded, superscalar, and VLIW
- Parallel programming languages, algorithms and applications

**Organizers**

Names and affiliations of main organizers and, where relevant, tentative composition of the committees (as complete as possible).

François Bodin – CAPS enterprise – France  
Tim Legrand    – CAPS enterprise - France  
Renato Miceli -- ICHEC – Ireland (non-profit organization)

We also hope to have John Cavazos research group members to participate on the auto-tuning part of this tutorial.

**Event Format**

Event format, i.e., length of event (half-day or full-day), expected number of presented papers, invited talks, panels, demonstrations, number of days, etc.

Half a day without labs but we hope to be able to organize lab for another half day.

- Expected number of submissions and participants.

We hope to have about 15 participants

Proposals should be emailed to the workshop chair, Thomas Wenisch <twenisch@umich.edu> or the tutorials chair, John Cavazos <cavazos@cis.udel.edu>.  