OmpSs tutorial, and Tareador Education Session among other BSC? activities in SC13

Are you interested in finding out about OmpSs or Tareador?

Don’t miss the upcoming OmpSs tutorial #117 *"Asynchronous Hybrid and Heterogeneous Parallel Programming with MPI/OmpSs and its Impact in Energy Efficient Architectures for Exascale Systems"* at Supercomputing 2013 in Denver, Colorado. Also related to the previous tutorial, you can learn more about how Tareador can help you developing OmpSs applications in the HPC Educators program session *"Exploring Parallelization Strategies at Undergraduate Level"*.

Don't miss ScalA at SC’13! The 4th in the series workshop focuses on novel scalable scientific algorithms that are needed to enable key science applications to exploit the computational power of large-scale systems. The program can be found at www.csm.ornl.gov/srt/conferences/Scala/2013/

As in previous editions, the BSC will be actively participating at the SC13 conference. During the

exhibition, feel free to come over our booth #3938 and meet any of our experts. Due to the success of previous year of the tutorial in the educational programme, this year BSC is spread through the conference and exhibition floor. We tried to summarize the BSC's activities in the following table:

Event Type	Speaker(s)	Day and Time
Technical paper "On the Usefulness of Object Tracking Techniques in Performance Analysis"	German Llort, Harald Servat, Juan Gonzalez, Judit Gimenez, Jesus Labarta	Wednesday 20th November, 2:00PM 2:30PM
4th Workshop on Latest Advances in Scalable Algorithms for Large-Scale Systems	Vassil Alexandrov, Jack Dongarra, Al Geist, Christian Engelmann	Monday 18th November, 9:00AM 5:30PM
Papers, Awards, Best Student Paper Finalists	Nikola Rajovic, Paul M. Carpenter, Isaac Gelado, Nikola Puzovic, Alex Ramirez, Mateo Valero	Tuesday 19th November, 3:30PM 4:00PM
Supercomputing with Commodity CPUs: Are Mobile SoCs Ready for HPC?		
Tutorial "Asynchronous Hybrid and Heterogeneous Parallel Programming with MPI/OmpSs and its Impact in Energy Efficient Architectures for Exascale Systems"	Jesus Labarta, Eduard Ayguade, Alex Ramirez, Rosa M. Badia	Monday 18th November, 8:30AM 5:00PM
Technical paper "Deterministic Scale-Free Pipeline Parallelism with Hyperqueues"	Hans Vandierendonck, Kallia Chronaki, Dimitrios S. Nikolopoulos	Wednesday 20th November, 11:00A 11:30AM
Poster: "GMT: Enabling Easy Development and Efficient Execution of Irregular Applications on Commodity Clusters"	Alessandro Morari, Oreste Villa, Antonino Tumeo, Daniel Chavarria, Mateo Valero	Tuesday 19th November, 5:15PM 7:00PM
Panel "Emerging Technologies and Big Data (Euro-Centric)"	Marie-Christine Sawley, Alison Kennedy, Alex Ramirez, Catherine Riviere	Thursday 21st November, 10:30A 12:00PM
Birds-of-Feather Session "Building on the European Exascale Approach"	Alex Ramirez	Tuesday 19th November, 12:15P 1:15PM
Birds-of-Feather session "Towards Exascale Runtime Systems: Challenges and Opportunities"	Hans-Christian Hoppe, Robert Wisniewski, Jesus Labarta	Tuesday 19th November, 5:30PM 7:00PM

More information about OmpSs Tutorial

Monday November 18, 2013

Due to its asynchronous nature and look-ahead capabilities, MPI/OmpSs is a promising programming model approach for future exascale systems, with the potential to exploit unprecedented amounts of parallelism, while coping with memory latency, network latency and load imbalance. Many large-scale applications are already seeing very positive results from their ports to MPI/OmpSs (see EU projects Montblanc, DEEP, TEXT). We will first cover the basic concepts of the programming model. OmpSs can be seen as an extension of the OpenMP model. Unlike OpenMP, however, task dependencies are determined at runtime thanks to the directionality of data arguments. The OmpSs runtime supports asynchronous execution of tasks on heterogeneous systems such as SMPs, GPUs and clusters thereof. The integration of OmpSs with MPI facilitates the migration of current MPI applications and improves the performance of these applications by overlapping computation with communication between tasks. The tutorial will also cover the performance tools available for the programming model: Paraver performance analysis tool. Examples of benchmarks and applications parallelized with MPI/OmpSs will also be presented. The tutorial will present the impact of the programming model to address the limitations of using low-end devices to build power-efficient parallel platforms. The tutorial will also include hands-on.

URL: http://sc13.supercomputing.org/schedule/event_detail.php?evid=tut117

Tareador: HPC Educator Session at SC13

Wednesday November 20, 2013

We are living the "real" parallel computing revolution. Something that was the concern of a "few" forefront scientists has become mainstream and of concern to every single programmer. This HPC Educator Session proposes a set of tools to be used at undergraduate level to analyze different parallelization strategies and their potential benefit. Tareador provides a very intuitive approach to visualize these strategies and understand their implications. The programmer needs to use simple code annotations to identify tasks and Tareador will dynamically build the computation task graph, identifying all data-dependencies among the annotated tasks. Tareador also feeds Dimemas, a simulator to predict the potential of the proposed strategy and visualize an execution timeline (Paraver). Using the environment, we show a top-down approach that leads to appropriate parallelization strategies (task decomposition and granularity) and that helps to identify tasks interactions that will need to be guaranteed when coding the application in parallel.

URL: http://sc13.supercomputing.org/schedule/event_detail.php?evid=eps104

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