



RETIS Seminars

November 4-6, 2014 – Yellow Room
Retis Lab – TeCIP Institute
Via Moruzzi, 1 - Pisa

Seminar Series on **Multicore Scheduling and Timing Analysis**

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Abstract:

Multicore systems are currently not as efficient and time-predictable as single cores computers, requiring novel real-time scheduling algorithms and analysis to bridge the gap. This seminar series touches on some of those problems.

Semi-partitioned scheduling aims at combining the best aspects of partitioned and fully-migrative scheduling. Partitioning simplifies scheduling by breaking it up into multiple uniprocessor scheduling problems and has low overheads. But for efficient system utilization, task migration is required. Semi-partitioning employs limited and carefully managed task migration, for high utilization without excessive overheads. Algorithms from the two main flavors of semi-partitioning (server/timeslot-based and timed-migration-based) are discussed and compared.

In another research front, the immense raw processing power of GPUs is increasingly used for general-purpose extremely parallel applications consisting of thousands of identical threads, operating on different data. Techniques are needed for upper-bounding the time since the first thread starts executing until all threads have completed: this is the "GPU equivalent" of a WCET. The challenge is that we cannot control the intra-GPU scheduling, nor is it publicly documented.

Lectures

November 4, 2014 – 11:00	Slot-based and server-based scheduling in semi-partitioned schemes
November 5, 2014 – 11:00	Timed-job-migration-based scheduling in semi-partitioned schemes
November 6, 2014 – 11:00	Timing analysis for parallel applications on GPUs



Brief Bio

Konstantinos Bletsas is a research associate at the Polytechnic Institute of Porto, Portugal, working on multiprocessor scheduling algorithms. He was born in 1978 and grew up in Volos, Greece. He has a first degree (2002) in Electronics and Computer Engineering from the Technical University of Crete (Chania, Greece) and a PhD (2007) in Computer Science from the University of York (England), supervised by Neil Audsley. In 2007, he joined the CISTER Research Unit (Porto, Portugal).