SORS: Parallelism: a serious goal or a silly mantra (and what else is needed for the microprocessor of 2024)

Speaker: Yale Patt (The University of Texas at Austin)

Venue: FIB Sala dÁctes

Abstract:

In this talk, I want to reflect on two things: (1) the enormous promotion of parallelism, often by those who are clueless as to what it is or why it could be such a good idea, and (2) the transformation hierarchy, heralded with practically no fanfare at all, but just may contain a few silver bullets.

The hoopla over parallelism comes naturally from the existence of multicore, which is the simplest result of the continuing increase in transistor count (Moore's Law). Unfortunately, that increase comes with problems, and I humbly suggest the transformation hierarchy may help solve some of them. If there is time I hope to show examples of some of the work we are doing that will benefit from moving the run-time system from the operating system to where it belongs.

Bio Sketch can be found at http://users.ece.utexas.edu/~patt/Bio/

Today, Yale Patt works on problems for the microprocessors of the year 2018, when technology promises each chip will contain more than 30 billion transistors. His research focuses on breaking the abstraction layers that separate the problem statement in natural language from the circuits that execute the program. Some of his current projects include (1) ACMP, a heterogeneous multi-core microprocessor, where many of the cores are reconfigurable either for high-performance ILP or for high-throughput, (2) improving the interface between the processor core and the DRAMs, (3) GPUs for non graphics processing, (4) effective prefetching in a multi-core environment, and (5) more effective use of the run-time system for performance.

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