

Multicore processors have arrived. Now what?

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Abstract:

The technology advances have lead to a new type of microprocessor: the multicore processors. The advantages of such technology include the simpler and scalable design, improved performance and smaller power consumption. All these factors determine the success of the multicore processors. As such, today, almost all general-purpose systems available in the market have a 2 to 8 core multicore processor.

The success of this technology will lead to multicore processors with many more cores on the same chip as there seem not to be any serious technological obstacles. The basic question will be how we will be able to utilize efficiently all those cores. Although there are some scientific applications that can take advantage of a large number of cores, the efficient use of the cores for general-purpose applications is an open research topic.

In this presentation I will describe different techniques which are being studied in the CASPER (Computer Architecture and Systems Performance Evaluation Research) research group as possible solutions to the above mentioned issue. Among these we propose the use of the HelperCore technique where cores are utilized for different tasks that help improve the performance of the applications.