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Title: Multicore Programming Case Studies: Cell Broadband Engine and NVIDIA Tesla

Abstract:

Nowadays, multicore architectures are omnipresent and can be found in all market segments. In particular, they constitute the CPU of many embedded systems (for example, video game consoles, network processors or GPUs), personal computers (for example, the latest developments from Intel and AMD), servers (the IBM Power6 or Sun UltraSPARC T1 among others) and even supercomputers (for example, the CPU chips used as building blocks in the IBM Blue-Gene/L and Blue-Gene/P systems).

However, there are two platforms that are currently concentrating an enormous attention due to their tremendous potential in terms of sustained performance: the Cell Broadband Engine (Cell BE from now on) and the NVIDIA Tesla computing solutions. The former is a recent heterogeneous chip-multiprocessor (CMP) architecture jointly developed by IBM, Sony and Toshiba to offer very high performance, especially on game and multimedia applications. In fact, it is the heart of the PlayStation 3. The latter is a GPU used as a data-parallel computing device based on the Computed Unified Device Architecture (CUDA) common to the latest NVIDIA GPUs. The common denominator is a multicore platform which provides an enormous potential performance benefit driven by a non-traditional programming model. In this talk we try to provide some insight into the peculiarities of the programming models for both platforms along with a qualitative comparison between them.

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