

Energy-Efficient Algorithms

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Abstract

Energy consumption has become a major concern in computer system design over the past years. Power dissipation is critical not only in battery-operated mobile computing devices but also in desktop computers and servers where CPUs typically account for more than 50% of the energy consumption.

In this talk we will investigate algorithmic techniques to save energy. These include power-down strategies as well as dynamic processor speed scaling techniques. Essentially, the problems reduce to scheduling a set of jobs on variable speed processors so as to minimize energy consumption and, possibly, a second objective function. We will study various online and offline settings and will present efficient algorithms with a provably good performance.