

EINLADUNG

Zeit: Montag, 15.05.2017, 14:00 Uhr

Ort: Raum 5056, Ahornstraße 55

Referent: Prof. Felix Wolf,
Laboratory f. Parallel Programming, TU Darmstadt

Titel: Isoefficiency in Practice: Configuring and Understanding the Performance of Task-based Applications

Abstract:

Task-based programming offers an elegant way to express units of computation and the dependencies among them, making it easier to distribute the computational load evenly across multiple cores. However, this separation of problem decomposition and parallelism requires a sufficiently large input problem to achieve satisfactory efficiency on a given number of cores. Unfortunately, finding a good match between input size and core count usually requires significant experimentation, which is expensive and sometimes even impractical.

In this talk, we propose an automated empirical method for finding the isoefficiency function of a task-based program, binding efficiency, core count, and the input size in one analytical expression. This allows the latter two to be adjusted according to given (realistic) efficiency objectives. Moreover, we not only find (i) the actual isoefficiency function but also (ii) the function one would yield if the program execution was free of resource contention and (iii) an upper bound that could only be reached if the

program was able to maintain its average parallelism throughout its execution. The difference between the three helps to explain low efficiency, and in particular, it helps to differentiate between resource contention and structural conflicts related to task dependencies or scheduling. The insights gained can be used to co-design programs and shared system resources.

Es laden ein: Die Dozenten der Informatik