Abstract

Multi-core architectures, which have multiple processing units on a single chip, are widely used as a way to achieve higher processor performance. They have potential to deliver increased performance over single-core processors. Multi-core processors have become mainstream in processor design. In multiprocessing, only inter task parallelism can be achieved. But, computation-intensive real-time systems must exploit intra-task parallelism to take full advantage of multi-core processing. In this paper, the problem of scheduling periodic parallel tasks with implicit deadlines on multi-core processors is addressed. A task decomposition method that decomposes each parallel task into a set of sequential tasks is discussed. In this paper, a general model for deterministic parallel tasks, where a task is represented as a DAG with different nodes having different execution requirements is discussed. First, a DAG generation method for the tasks is discussed and secondly, task decomposition that splits a DAG into sequential tasks is discussed.
An Approach for Multi-Core Real Time Parallel Processing

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Index Terms

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