Abstract

This paper deals with the study of Earliest Deadline First (EDF) which is an optimal scheduling algorithm for uniprocessor real-time systems used for scheduling the periodic task in soft real-time multiprocessor systems. In hard real-time systems, a significant disparity exists. EDF-based schemes and RMA scheduling (which is the only known way of optimally scheduling recurrent real-time tasks on multiprocessors): on M processors, all known EDF variants have utilization-based schedulability bounds of approximately M/2, while RMA algorithms can fully utilize all processors. This is unfortunate because EDF-based algorithms entail lower scheduling and task-migration overheads. In work on hard real-time systems, it has been shown that this disparity in schedulability can be lessened by placing caps on per-task utilizations. Our main contribution is a new EDF-based scheme that ensures bounded deadline tardiness. In this scheme, per-task utilizations must be focused, but overall utilization need not be restricted. Our scheme should enable a wide range of soft real-time applications to be
scheduled with no constraints on total utilization. Also propose techniques and heuristics that can be used to reduce tardiness as well as increase the efficiency of task.

References


Index Terms

Computer Science Parallel Processing

Keywords

Multiprocessor Systems Soft Real-time Task Migration Exact Schedulability Test Earliest-deadline-first Scheduling Feasible Earliest-deadline-first