An Efficient Scheduling Strategy for Overloaded Real Time System

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Abstract

Scheduling is a technique which makes an arrangement of performing certain tasks at specified period. The intervals between each function have been clearly defined by the algorithm to avoid any overlapping. The bound in which real time applications are needed to respond to the stimuli is known as deadline. In order to achieve optimized results in real time operations the various scheduling techniques are developed. Earliest Deadline First algorithm is optimal scheduling algorithm for single processor real time systems when the systems are preemptive and underloaded. The limitation of this algorithm is, its performance decreases exponentially when system becomes slightly overloaded.

The objective of work is to achieve optimum performance in underloaded condition and achieve high performance in overloaded condition. Proposed algorithm is design for scheduling periodic task on uniprocessor platform. With this algorithm we group jobs with nearly identical deadline and execute the jobs of a group by determining both slack time and deadline of job is another approach. The performance of the proposed algorithm is measured in terms of miss count,
average response time, average waiting time and number of preemption count with existing Earliest Deadline First and Group Priority Earliest Deadline first scheduling algorithm. Results are presented by comparing proposed algorithm with other real-time algorithms including, EDF and GPEDF. The Proposed algorithm improves the success count and decrease miss count more than 10% compared with GPEDF and more than 30% compared with EDF.

References


**Index Terms**

Computer Science Information Sciences

**Keywords**

Real-time scheduling algorithms, deadline, overload condition, EDF, GPEDF.