

Weakly Hard Real-Time Scheduling on Multiprocessor Systems

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Abstract-Real-time systems or tasks can be classified into three categories. based on the "seriousness" of deadline misses hard, soft and weakly hard real-time tasks. The consequences of a deadline miss of a hard real-time task can be prohibitively expensive whereas soft real-time task systems tolerate "some" deadline misses. While, in a weakly hard real-time task, the distribution of its met and missed deadlines is specified precisely. Much of weakly hard real-time system has been focused on scheduling and schedulability analysis of uniprocessor system. As a systems demand complex and significantly increased functionality, multiprocessor scheduling has been given attention and taken into consideration. In fact, in the multiprocessor, the predictability problems seem even harder than in uniprocessor: thus, in order to cater the problem, the sufficient and efficient multiprocessor scheduling algorithm technique combining with the exact schedulability analysis and weakly hard temporal constraints is present to provide weakly hard real-time guarantees under static priority scheduling algorithm. The initial approach to schedule weakly hard real-time tasks has been proposed where from this approach, it focus to guarantee the accomplished of timing requirements and timing constraints of the task in the weakly hard real-time systems is predictable.

Keywords-*weakly* hard real-time systems: schedulability analysis; multiprocessor systems: global scheduling; partitioning scheduling