

A Survey of Multi-Processor Scheduling For Hard Real-Time Systems

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Abstract

In class, both of scheduling algorithms and priority inheritance protocols in the context of a single processor were examined in details. Nevertheless, the emergence and popularity of distributed computing system gave rise to the need to solve multi-processor scheduling and priority inheritance problems. As the supplementary study, this paper surveys existing scheduling algorithms in the context of multiple processors. The very first sections outline the background of multi-processor scheduling problems, as well as system models, terminology, and the metrics of scheduling algorithms. Partitioned scheduling and global scheduling, as the focus of our research, will be fully explored. Moreover, we will give brief sketch to the hybrid approaches of partitioned scheduling and global scheduling.

Keywords: System, Scheduling Algorithm, Task Management

1. Introduction

- 2 0. Background and introduction
- 3 1. System Models
- 4 2. Partitioned Scheduling
- 5 3. Global Scheduling
- 6 4. Hybrid Approach
- 7 5. Conclusion and Discussion

8	<i>1.1. Problem Defintion</i>
9	<i>1.2. Preview Of Related works</i>
10	<i>1.3. Paper Organization</i>
11	2. System Models

12 *2.1.*

13 **3. Partitioned Scheduling**

14 In this section, we will review some partitioned approaches to multipro-
 15 cessor real-time scheduling.

16	<i>3.1. Characteristic of Partitioned Scheduling</i>
17	<i>3.2. RMNF</i>
18	<i>3.3. RMFF</i>
19	<i>3.4. EDF-FF</i>
20	<i>3.5. EDF-BF</i>
21	<i>3.6. Comparision</i>

22 4. Global Scheduling

23 In this section, we will review some global approaches to multiprocessor
24 real-time scheduling.

25 4.1. Overview

26 Although various categories of global scheduling algorithms, the focus of
27 this paper is on the Global Dynamic Priority Scheduling. In the following
28 subsection, it will be characterized in details.

29 4.2. Global Dynamic Priority Scheduling

30 In this subsection, we will present our in-depth exploration to the track
31 of global dynamic priority scheduling algorithm.

32 4.2.1. Proportionate Fairness Algorithms (PF)

33 The first and foremost one is

34 4.2.2. LLREF

35 4.2.3. EDZL

36 5. Hybrid Approaches

37 6. Conclusions