DOI: 10.20472/IAC.2015.015.101

PYUNG HOI KOO

Pukyong National University, South Korea

A LOADING DECISION FOR BATCH PROCESSORS WITH CONTINUOUS JOB ARRIVALS

Abstract:

Batch processors processes a number of jobs simultaneously as a batch. Examples of batch processors include oven, shuttle bus, amusement park rides, and so on. When a batch processor completes its task and has some near-future job arrival information, a loading decision should be made whether to start the process right away or to wait for the upcoming jobs.
This presentation introduces a look-ahead loading procedure for batch processors, where multiple job types are available, with the objective of average tardiness minimization. The distinct characteristics of the proposed procedure is that it takes advantage of the due-date of current jobs in queue as well as the due-date of upcoming jobs, the fixed number of look-ahead reduces the opportunity of being affected by the next job arrivals, and unlike the existing control policies, even when the number of jobs in queue is greater than capacity, loading can be delayed for more urgent jobs. The performance of the proposed control strategy is validated with simulation experiments.

Keywords:

batch processor, loading decision, look-ahead, tardiness minimization

JEL Classification: C61, C44