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Off-line time aware divisible-load scheduling optimization model. (Chinese. English summary)

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Summary: As scientific applications become more data intensive computing, finding an efficient scheduling strategy for massive computing in parallel and distributed systems has drawn increasingly attention. Most existing scheduling models assume that all processors can 100% finish computing, that is, they keep online during the completion of assigned workload fractions. In fact, in the real parallel and distributed environments, different processors have different off-line time. Therefore, off-line time constraints of processors should be taken into account before distributing of the workload fractions; otherwise, some processors may not be able to finish computing their assignments. To solve the above issue, this paper proposes an off-line time aware divisible-load scheduling model and designs an effective global optimization genetic algorithm to solve it. Finally, experimental results illustrate the effectiveness of the proposed model and the efficiency of the proposed algorithm.

MSC:

- 90B35 Deterministic scheduling theory in operations research
- 90C59 Approximation methods and heuristics in mathematical programming
- 90C26 Nonconvex programming, global optimization

Keywords:

divisible-load scheduling; genetic algorithm; off-line time; parallel and distributed systems

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