

Searching methodology with goal state optimization considering computational resource constraints (Prof. J. Ota)

Searching methodology with goal state optimization considering computational resource constraints is proposed. The three topics shown in Fig. 1 should be solved here. Combination of extended graph searching methodology and parallelization of task execution and on-line planning makes it possible to solve the problem. The proposed method is evaluated with the rearrangement problem of twenty movable objects, Comparison of the goal configuration with respect to the demanded task completion time is shown in Fig. 2. The goal state is changed depending on the demanded time, which consists of the time for offline planning, that for online planning and that for task execution only. Balancing among the three classes is made adequately depending on the demanded time. The time for offline planning is very short (almost reactive) when the demanded task completion time is short, and the ratio of the time for offline planning becomes large with respect to the realized task completion time when the task completion time is long. These results show the effectiveness of the proposed method.

Keywords: graph searching, resource constraints, parallelization of action and plan, rearrangement planning

References

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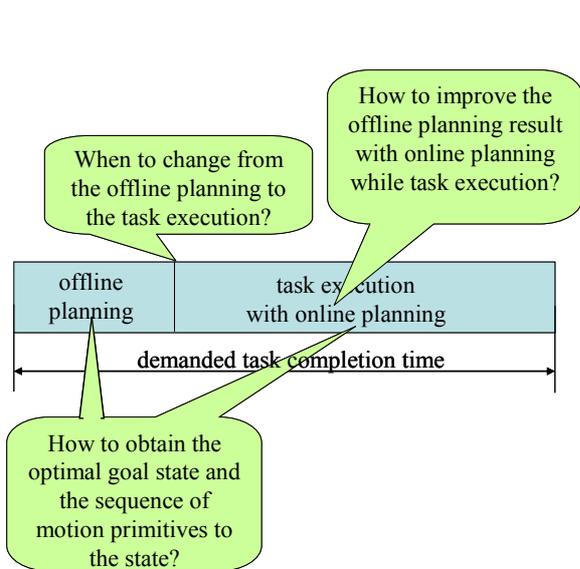


Fig.1 The structure of the problem

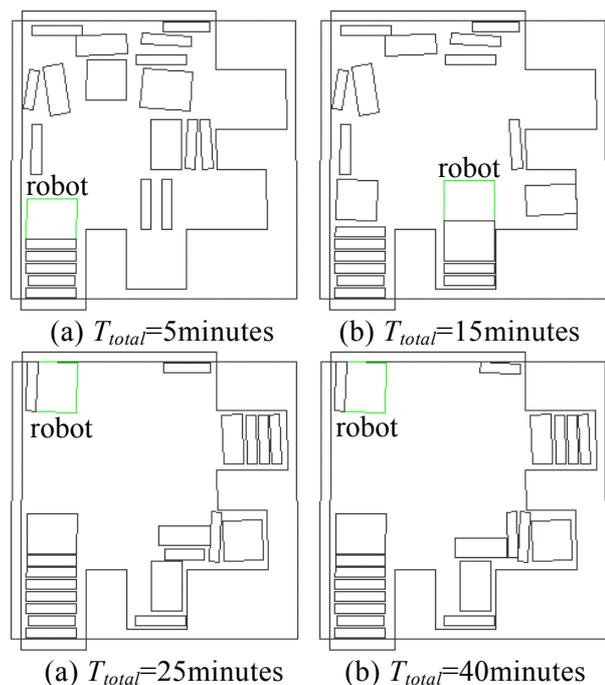


Fig. 2 Comparison of final arrangement with respect to the demanded time