A new particle swarm optimization for the open shop scheduling problem

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Abstract

This paper presents a new particle swarm optimization (PSO) for the open shop scheduling problem. Compared with the original PSO, we modified the particle position representation using priorities, and the particle movement using an insert operator. We also implemented a modified parameterized active schedule generation algorithm (mP-ASG) to decode a particle position into a schedule. In mP-ASG, we can reduce or increase the search area between non-delay schedules and active schedules by controlling the maximum delay time allowed. Furthermore, we hybridized our PSO with beam search. The computational results show that our PSO found many new best solutions of the unsolved problems.

Keyword：Open shop scheduling, Particle swarm optimization