Abstract

Planning and scheduling are as decision making processes which they have important roles in production systems and industries. According that, job shop scheduling is one of NP-hard problems to solve multi-objective decision making approaches. So, the problem is known as uncertain with many variables in optimal solution view. Finding optimal solutions are essential task in scheduling of jobs between machines in the industries. In this paper, we present classical sum weighted (WS) method and non-dominated sorting genetic algorithm II (NSGA-II) to solve flexible job shop scheduling problem (FJSSP) with multiple objectives and find Pareto-fronts: minimizing completion time of jobs and maximizing machine employment. To generate Pareto-fronts, a search algorithm uses mechanism of variable weights and random selection to change directions in search spaces. The experiment results indicate that NSGA-II solve the problem more acceptable than WS method with considering computing time and consuming memory.

Index Terms

Computer Science       Artificial Intelligence

Keywords

Multi-Objective Optimization, Flexible Job Shop Scheduling Problem, Weighted Sum Method, NSGA-II, Production Systems.