JOB SHOP SCHEDULING WITH THE AID OF HYBRID SOCIAL SPIDER OPTIMIZATION AND GRAY WOLF OPTIMIZATION WITH INDUSTRIAL SCHEDULING CASE STUDY

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ABSTRACT

For a significant outcome in the auto industries, scheduling plays a vital role for effective utilization of jobs allocate to machine. In job shop scheduling process, the scheduling of jobs and machines in sequential order is required to be made to obtain the minimized makespan time. It is difficult to find out the optimal solution manually. To achieve the minimized makespan time we have incorporated Social Spider Optimization (SSO) and Grey Wolf Optimization (GWO) algorithm by fusing method. Several benchmark problems are tested by using these algorithms to minimize the makespan time and the results obtained are compared with benchmark values. Even for the huge problem size in job shop scheduling this technique has achieved the average of 99.90% closer to benchmark minimized makespan time. Finally, this algorithm has been tested for scheduling problem in automobile parts manufacturing industry, namely India forge Ltd.

Keywords: Job shop scheduling, Makespan time, Social Spider Optimization (SSO), Grey Wolf Optimization (GWO), Particle Swarm Optimization (PSO), manufacturing industry.