Performance Comparison of Swarm Intelligence Algorithms for Web Caching Strategy

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Abstract	Web caching is one strategy that can be used to speed up response times by storing frequently accessed data in the cache server. Given the cache server limited capacity, it is necessary to determine the priority of cached data that can enter the cache server. This study simulated cached data prioritization based on an objective function as a characteristic of problem-solving using an optimization approach. The objective function of web caching is formulated based on the variable data size, count access, and frequency-time access. Then we use the knapsack problem method to find the optimal solution. The Simulations run three swarm intelligence algorithms Ant Colony Optimization (ACO), Genetic Algorithm (GA), and Binary Particle Swarm Optimization (BPSO), divided into several scenarios. The simulation results show that the GA algorithm relatively stable and fast to convergence. The ACO algorithm has the advantage of a non-random initial solution but has followed the pheromone trail. The BPSO algorithm is the fastest, but the resulting solution quality is not as good as ACO and GA.
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