عنوان مقاله:

Hybrid Task Scheduling Method for Cloud Computing by Genetic and PSO Algorithms

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خلاصه مقاله:

Cloud computing makes it possible for users to use different applications through the internet without having to install them. Cloud computing is considered to be a novel technology which is aimed at handling and providing online services.For enhancing efficiency in cloud computing, appropriate task scheduling techniques are needed. Due to the limitations and heterogeneity of resources, the issue of scheduling is highly complicated. Hence, it is believed that an appropriate scheduling method can have a significant impact on reducing makespans and enhancing resource efficiency. Inasmuch astask scheduling in cloud computing is regarded as an NP complete problem; traditional heuristic algorithms used in task scheduling do not have the required efficiency in this context. With regard to the shortcomings of the traditional heuristicalgorithms used in job scheduling, recently, the majority of researchers have focused on hybrid meta-heuristic methods for task scheduling. With regard to this cutting edge research domain, we used HEFT (Heterogeneous Earliest Finish Time)algorithm to propose a hybrid meta-heuristic method in this paper where genetic algorithm (GA) and particle swarm optimization (PSO) algorithms were combined with each other. The experimental results of simulation are shown that the proposed algorithm optimizes the average makespans of the HEFT_UpRank, HEFT_DownRank, HEFT_LevelRank and MPQMA for 100 independent task graphs scheduling with 10, 50 and 100 tasks. Total optimization of makespans by the proposed algorithm against the other algorithms were 6.44, 10.41, 6.33 and 4.8 percent respectively.

کلمات کلیدی:

Cloud Computing; Task Scheduling; Genetic Algorithm; Particle Swarm Optimization Algorithm

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