SCOPE OF THE WORK

i. To explore the challenges of cloud computing paradigm to provide better resource utilization and on demand pay per use services with optimal cost.

ii. To define task scheduling problem and formulate mathematical model in cloud computing environment. The task scheduling problem is an important issue which is greatly influencing the performance cloud computing system. The proposed mathematical model is based on execution cost, migration cost, operational cost, down time cost and communication cost. The objective of the problem is minimizing the total cost.

iii. Since Task scheduling problem is NP-Complete, metaheuristics such as Genetic Algorithm, Ant Colony Optimization and Particle Swarm Optimization algorithms are considered to find out optimal/near optimal solution.

iv. To explore the possible use of different algorithms in combination with PSO. The algorithms considered are Standard PSO, Synchronous PSO and Asynchronous PSO. The asynchronous PSO algorithm is compared with synchronous and standard PSO.

v. Evaluation of different task scheduler algorithms are done by considering multiple tasks ranging from 10 to 100 tasks at a time. The memory requirements of the tasks are considered to be uniformly distributed in [250,500]. The number of data centers considered for simulation is 5 to 20. Number of iterations is done to see the performance of different algorithms.

vi. Scope also includes a comparative study of the performance of the proposed algorithms. Our experiments show that Particle Swarm Optimization algorithm outperforms the Genetic Algorithm and Ant Colony Optimization algorithms. It was observed that the PSO algorithms for task scheduling performance are 10-20% better than Genetic Algorithms and Ant Colony Optimization.