higher resource utilization and lower packet loss rate.

SC5: Soft Computing (II)

A Distributed Approach for Coordination between Traffic Lights Based on NNQ-learning and Game Theory

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Abstract:
Traffic signal control agent can improve its control ability by using the NNQ-learning method. This paper proposes a neural network Q-learning approach with fuzzy reward designed for online learning of traffic lights behaviors. The Q-function table usually becomes too large for the required state/action resolution. In these cases, tabular Q-learning needs a very long learning time and memory requirements which makes the implementation of the algorithm impractical, in real-time control architecture. We considered the problem of coordinating three traffic signals control. The coordination is done using control agents and the concept of game theory. To test the efficiency of the coordination mechanism, a prototype traffic simulator was programmed in visual C#.NET. Results using cooperative traffic agents are compared to results of control simulations where non-cooperative agents were deployed. It indicated that the new coordination method proposed in this paper is effective.

Scheduling Algorithms for Time Optimization in Economic Computational Grids

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Abstract
The users must pay for executing their applications in economic computational grids. Each user determines his deadline and budget and then requests cost or time optimization. A scheduling algorithm that adopts time optimization strategy, should allocate heterogeneous grid resources to heterogeneous user jobs so that their execution finishes by consuming determined budget in minimum time. In this paper, three new algorithms are introduced for this purpose. It is shown by using simulation that suggested algorithms have higher performance and perform users' requests in less time with respect to the reported algorithm

CLA-PSO: A Hybrid Model for Optimization

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Abstract:
In this paper a hybrid model which is a combination of cellular learning automata (CLA) and PSO is proposed. Each cell in the CLA contains a population of particles. The learning automaton in each cell takes the role of configuring the behavior of particles and also creating a balance between the process of global and local search. The results of experiments conducted on some standard problems show that the proposed algorithm produces better results than the standard PSO.

Finding Web Page Similarity Using Ant Colonies

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Abstract:
One of the important issues in web mining is how to find out web pages similarity. The approach presented in this paper for finding web pages similarity is inspired by the ant colonies foraging behavior, by means of the usage data. The idea is that if different users request a couple of pages consistently together, then these pages are likely to correspond to the same information needs and hence are similar. In the proposed approach, we consider the web users as artificial ants, and use the ant theory as a metaphor to mine user's activity in the Web site. To show the performance of the proposed method, it is compared other methods, hebbian method and a method based on learning automata.