Abstract: Evolutionary design of large-scale structures has been the topic of much recent research; however, such designs are usually hampered by the time consuming stage of prototype evaluations using standard finite element analysis (FEA). In this paper, a novel granulation based fitness approximation scheme is proposed in order to approximate the fitness function for substituting the time consuming large-scale problem analysis (L-SPA) by FEA. The proposed method is applied to two different hardware design problems that are evaluated using finite element analysis i.e. 3-layer composite beam and Airplane wing. In comparison with standard application of evolutionary algorithms, statistical analysis confirms that the proposed approach demonstrates an ability to reduce the computational complexity of the design problem without sacrificing performance.

Keywords: Evolutionary algorithms, Computational complexity, Fuzzy surrogates.

Abstract: As the world-wide web based Internet services and amount of information available on web increase, searching information becomes a time-consuming problem. Here we discuss building an intelligent spider (agent) to search the web, based on genetic algorithms. This spider is able to dynamically and intelligently analyze the contents of the selected homepages based on the links and indexing; and use different existing search engines to have a wide variety of links to follow. The spider presented in this paper uses Java to link to the web and Matlab to develop the user interface and performing GA operations. Matlab is used for easier future development. We will also represent the importance of Meta searching for a crawler, which is covered by mutation in our algorithm.

Keywords: Genetic algorithm, Search engines, Meta searching, indexing, Link based search

COMP6
SoftComputing 2

Title: A Distributed Learning Automata Based Algorithm for Solving Vehicle Routing Problem with Stochastic Demands

Asghar Ghorbani, Mohammad Reza Meybodi

Abstract: In the vehicle routing problem with stochastic demands a vehicle has to serve a set of customers whose exact demand is known only upon arrival at the customer's location. A solution to this problem is a permutation of the customers that minimizes the expected distance traveled by the vehicle. This problem is one of the NP-Complete problems and for this reason many approximate algorithms have been designed for solving it. In this paper an approximate algorithm based on distributed learning automata for solving vehicle routing problem with stochastic demands is proposed. To show the performance of the proposed algorithm computer simulations have been conducted and the results obtained are compared with the existing algorithms. The results of comparison have shown the efficiency of the proposed algorithm.

Keywords: Vehicle routing problem with stochastic demands, Approximate algorithms, Learning algorithm, Distributed learning automata

Title: An Evolutionary Spider Agent for Search Engines

Danyal Bustan, Hoda Moodi, Mohammad Reza Akbarzadeh Totonchi

Title: Combined A*-Ants Algorithm: A New Multi-Parameter Vehicle Navigation Scheme

Hojjat Salehinejad, Hossein Nezamabadi-pour, Saeid Saryazdi, Fereydoun Farrahi-Moghaddam

Abstract: In this paper a multi-parameter A*(A-star)-ants based algorithm is proposed in order to find the best optimized multi-parameter path between two desired points in regions. This algorithm recognizes paths, according to user desired parameters using electronic maps. The proposed algorithm is a combination of A* and ants algorithm in which the proposed A* algorithm is the prologue to the suggested ant based algorithm .In fact, this A* algorithm invigorates some paths pheromones in ants algorithm. As one of implementations of this method, this algorithm was applied on a part of Kerman city, Iran as a multi-parameter vehicle navigator. It finds the best optimized multi-parameter direction between two desired junctions based on city traveler parameters. Comparison results between the proposed method and ants algorithm demonstrates efficiency and lower cost function results of the proposed method versus ants algorithm.

Keywords: Ants algorithm, A* algorithm, Multi-parameter optimization, Vehicle navigation.

Title: Improved Intelligent Algorithms for Solving Job-shop Scheduling Problems

Hamed Kharrati, Sohrab Khanmohammadi

Abstract: Job-shop Scheduling Problem (JSP) deals with the sequencing operations of a set of jobs on a set of machines with minimum cost. JSP is one of extremely hard problems because it requires very large combinatorial search space considering the precedence constraint between machines. In this paper for solving JSP problems three new and modified intelligent methods are studied. For solving JSP problems, first Genetic Algorithm (GA) method with new crossover and mutation operators is introduced, the crossover operator is based on position of chromosome elements (Position Based Crossover)