

Different methodology for solving travelling salesman problem

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Abstract - Travelling salesman problem there are three methodology which we had covered in our paper. 1) generic problem 2) neural network 3) ant colony. Finds applications in wide domains. It is a well known NP Hard problem. A comparative analysis is done for the standard travelling salesman problem. It is found that there are three methodologies are used for solving traveling salesman problem which are respectively ant colony, natural network, and generic problem.

Keywords- travelling salesman problem, artificial neural network, ant colony, Np hard, metaheuristic.

I. INTRODUCTION

NP-Hard problems have been the centre of attraction to the researchers. The algorithms which can be solved in polynomial time by exact algorithms belong to class of NP-Hard problems. In this paper the algorithms aimed at is travelling salesman problem. Many approaches to solve travelling salesman problem are proposed in the past. In this paper TSP is solved using a metaheuristic algorithm called Ant colony optimization. There are many variants of ant colony optimization discussed in this paper and multi colony and single colony approaches exist in every variant.

II. AIM AND OBJECTIVE

It will help in find the vacant space on time whenever you will travel that should be compressed by travelling salesman. Tour length should be minimum and each vertex should be visited exactly once.

III. METHODOLOGY

- ant colony optimization
- artificial neural network
- genetic algorithm

Ant colony optimization - they have shown some important works such as adapting a dynamic candidate set strategy to rapid convergence speed and proposing and implementing dynamic updating rule for heuristic parameter based on entropy to improve the performance in solving problem. From experimental results (Using TSP lib test cases), the proposed system is more effective than the standard algorithm in terms of convergence speed and the ability to solve ant colony optimization. Best optimal solution. In Ant System the above process which comprises of solution construction and pheromone update is for a colony of ants. If there is more than one colony of ants then both the colonies will have one local pheromone update matrix and will share one global pheromone update matrix.

NATURAL BEHAVIOR OF ANT

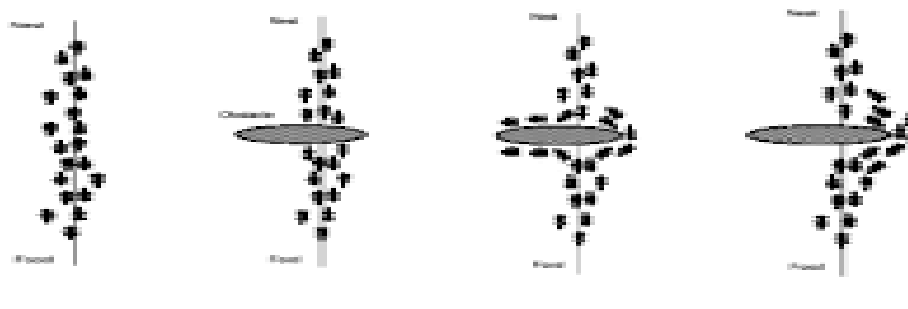


Figure 1 Ant Colony Optimization

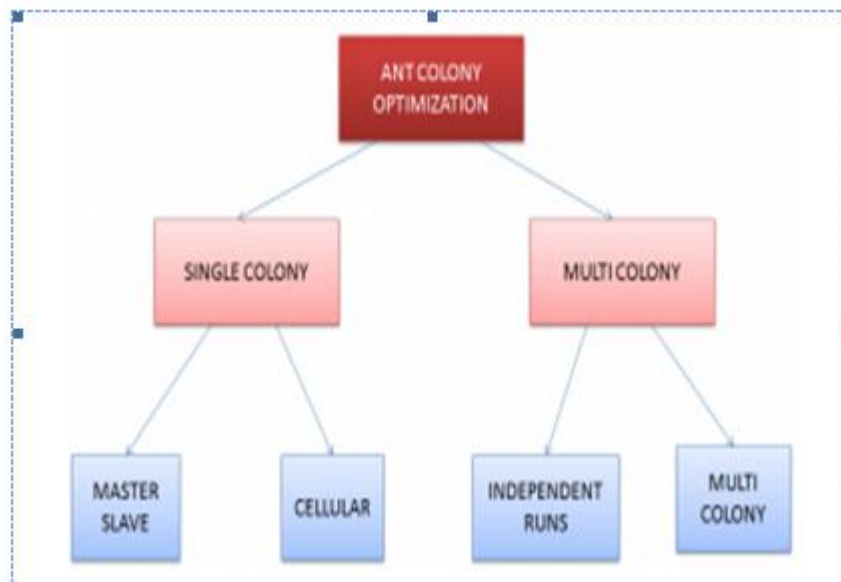


Figure 2 Ant Colony Optimization 2

Artificial neural network - they does two significant steps solving the TSP with self-organizing maps- the original TSP is reduced to search of a good neighborhood-preserving map and anew distance function. The work showed Wang's recurrent neural network with the "Winner Takes All "principle to find the solution of the Assignment Problem and The idea of ANNs is based on the belief that working of human brain by making the right connections, can be imitated using silicon and wires as living neurons and dendrites. The human brain is composed of 100 billion nerve cells called neurons. They are connected to other thousand cells by Axons. Stimuli from external environment or inputs from sensory organs are accepted by dendrites. These inputs create electric impulses, which quickly travel through the neural network. A neuron can then send the message to other neuron to handle the issue or does not send it forward.

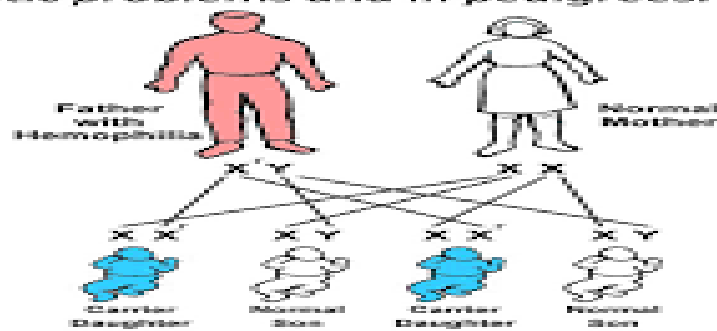


Figure 3 Neural Network

Genetic problem - it Roulette Wheel Selection operator with heuristic crossover and inversion mutation probabilities has been used to solve well known optimization problem Traveling Salesmen Problem. The fitness function was chosen to be the inverse of the distance between the pair nodes. They compared the results of RWS with another selection method Stochastic Universal Selection all the computation were performed on a Pentium processor with minimum The program was written in the C

They tested RWS & SUS method for different crossover method. It was performed on six bench mark problem instances which are taken from the TSPLIB. Crossover probability was chosen to while the mutation probability as chosen Results showed that gives a better result for small number of cities and converges faster as compared to RWS. But as number of city get large, RWS gives better results than solving the travelling salesman problem using the genet

- You must be able to solve genetic problems with sex-linked inheritance in traditional genetic problems and in pedigrees.



IV. CONCLUSION AND FUTURE WORK

In our project paper we use main 3 methodologies. So here is a than 3 methodology one is Neural network and ant colony and generic problem. So from this paper all three is best for us. We searched and referred various project, in this paper signal colony and multi colony approach to next - min ant system is proposed. this approach are applies for difference graph having vertex range 64 to 2048 and the result are compare from solution and it is clear from analysis the result obtain from multi colony ant system are better .

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