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بالرسالة صفحات لم ترد بالأصل

Cairo University
Institute of Statistical Studies and Research
Department of Computer and Information Sciences

Enhancing The Behavior Of The Ant Algorithms In Solving Optimization Problems

By

Nadia Ibrahim Abdelsabour

A thesis submitted to the Department of Computer and Information Sciences,
Institute of Statistical Studies and Research, Cairo University,
in partial fulfillment of the M.Sc. Degree in Computer Science

Supervision

Prof. Dr. Atef M. A-Moneim **Dr. Hesham Ahmed Hefny**

2004

Cairo University
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Approval Sheet

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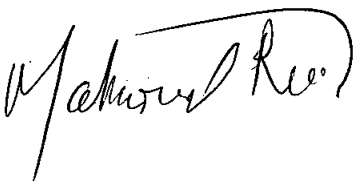
This thesis has been approved by:

Name	Signature
Prof. Dr. Mahmoud Riad Mahmoud Institute of Statistical Studies and Research	
Prof. Dr. Atef M. A-Moneim Institute of Statistical Studies and Research	
Prof. Dr. Nevin Mahmoud Darwish Faculty of Engineering	

Abstract

In recent years, Swarm Intelligence , and in particular, Ant algorithms have received much attention among researchers as promising search and optimization techniques which are inspired from nature.

Ant algorithms depend essentially on the idea of synergistic use of cooperation among many relatively simple agents, which communicate by distributed memory. In such a research area, several approaches have been proposed to simulate the behavior of real ants. Among such approaches, Ant Colony System (ACS) comes as the most interesting one.

The aim of this thesis is to introduce two enhancements to Ant Colony System, which is considered one of the most successful ant algorithms used to solve combinatorial optimization problems. The thesis presents the results of 15 experiments, where the proposed algorithm is compared with the classical Ant Colony System in solving shortest path problems.

Experimental work show that the modified ACS algorithm outperforms the classical one in terms of reducing the number of tours needed to reach the optimum solution and increasing the ability of dealing with different instances of the shortest path problem.

Certification

I certify that this work has not been accepted in substance for any academic degree and is not being concurrently submitted in candidature for any other degree. Any portions of this thesis for which I am indebted to sources are mentioned and explicit references are given.

Student: Nadia Ibrahim Abdelsabour

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At first, I pray and thank my God for his uncountable gifts to me, without his assistance I could not be able to do any thing.

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