ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Lecture with Computer Exercises:
Modelling and Simulating Social Systems with MATLAB

Project Report

Solving the Travelling Salesman Problem by Using an Articficial Ant Colony

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Zurich
May 2014

Agreement for free-download

We hereby agree to make our source code for this project freely available for download from the web pages of the SOMS chair. Furthermore, we assure that all source code is written by ourselves and is not violating any copyright restrictions.

Raphaela Wagner

Giandrin Barandun

Contents

1 Abstract

2 Individual contributions

2.1 Raphaela Wagner

With the aim of achieving a good model for solving the travelling salesman problem by the use of artificial ants Raphaela helped the group understanding the underlying paper and the included model. She contributed a great amount of explanations and ideas how to approach the whole project.
In a second step she took care of how to implement the raw data from the TSP-library into MATLAB and transform it to a usable form. Further more she coded the functions "eta.m", "global_pheromene_update.m", "test_funktionen.m" and "update.m" and helped improving and correcting the main program.
After the code was written she did a lot of testing with different problem sets and compared the solution of the program to known solutions.

When the group got stuck and did not see a way out of a specific problem she was the one to bring along a hot chocolate and cheer the group up again.

2.2 Giandrin Barandun

The paper which is thought to be reconstructed on the following pages was selected and suggested to the group by Giandrin and during the whole process he tried to have some influence on the project with his wide technical understanding of the problem.
The codes for the functions "prob_dist.m", "calc_Lnn.m", "choose_city.m", "main_initialize_system.m", "coordinates.m" and "calc_dist.m" are his contributions as well as the collaboration on the main program. He searched the internet for known TS-problems and their solutions and put all data in a readable form. A lion's share for the program working at the end was his bug fixing in all the functions and programs and combining them to the running model.

3 Introduction and Motivations

4 Description of the Model

5 Implementation

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