Department of Information Technology

Development of Optimized Itinerary Agent Design Pattern Using Development Algorithm

Prepared by
Fawwaz Naser Al-Refa’e

Supervised by
Dr. Faiz Al-Shrouf

This Thesis is submitted to the Faculty of Information Technology as a Partial Fulfilment of the Requirement for Master Degree in Software Engineering

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AUTHORIZATION STATEMENT

I’m, Fawwaz Naser Al-Refa’e, authorize Isra University to provide hard copies or soft copies of my thesis to libraries, institutions, or individuals upon their request.

Name: Fawwaz Naser Al-Refa’e
Signature: [Signature]
Date: 02-09-2020
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الإسم: فواز ناصر الرفاعي
التوقيع: 
التاريخ: 02-09-2020
The undersigned have examined the thesis entitled "Development of Optimized Itinerary Agent Design Pattern Using Development Algorithm" presented by Fawwaz Naser Al-Refa'e, a candidate for the degree of Master of Science in Software Engineering and hereby certify that it is worthy of acceptance.

Date 3/9/2020

Dr. Faiz Al-Shrouf

Date 2/9/2020

Prof. Dr. Mohammed Otair

Date 2/9/2020

Dr. Osama Al-Haj Hassan
DEDICATION

This thesis is dedicated to my family those who have always motivated me and played a great role in the completion of this thesis. Secondly, I dedicate also this dissertation to my supervisor Dr. Faiz Al-Shrouf who has guided me during the project period. Lastly, I dedicate this thesis to all my friends who gave me their support and advice.
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<th>Abbreviation</th>
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<tr>
<td>PC</td>
<td>Personal Computer</td>
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<td>MA</td>
<td>Mobile Agent</td>
</tr>
<tr>
<td>ACO</td>
<td>Ant Colony Optimization</td>
</tr>
<tr>
<td>JADE</td>
<td>Java Agent Development Framework</td>
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<tr>
<td>GA</td>
<td>Genetic Algorithm</td>
</tr>
<tr>
<td>NCA</td>
<td>Node Compression Algorithm</td>
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<td>ACS</td>
<td>Ant Colony System</td>
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<td>PSO</td>
<td>Particle Swarm Optimization</td>
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<tr>
<td>JEE</td>
<td>Java Execution Environment</td>
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<tr>
<td>SI</td>
<td>Swarm Intelligence</td>
</tr>
<tr>
<td>AMS</td>
<td>Agent Management System</td>
</tr>
<tr>
<td>JDK</td>
<td>Java Development Kit</td>
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ABSTRACT

The Personal Computer (PC) framework has been advanced from a solid PC gadget to a significantly more perplexing customer worker condition in earlier years. One of those recently evolved advancements is the Mobile Agent (MA). A MA is a creation of program and information that can (move) starting with one PC then onto the next self-rulingly and proceeds with its execution on the goal PC. As a general rule, the portable operator is the code/object moving which goes in its itinerary inside the system of associated hubs.

In this thesis, the best way in insignificant time is found by relocating the Mobile Agent from the source hub to the goal hub utilizing the numerical procedure and streamlining strategy. This work centers on how to locate the best way using the Itinerary design pattern and the Ant Colony Optimization (ACO) algorithm with the Java Agent Development Framework (JADE). When comparing the algorithms with each other, time is considered an essential measure for selecting the best path when using the proposed approached the time of selecting the best path is 271.511, After figuring out the best path, the path will be compared with those of similar works that used the master-slave design pattern with the Genetic Algorithm (GA) and also that used the Node Compression Algorithm (NCA).

Keywords: Mobile Agent, Ant Colony Optimization Algorithm ACO, Itinerary Design Pattern.