



**Department of Information Technology**

**Development of Optimized Itinerary Agent Design Pattern  
Using Development Algorithm**

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**This Thesis is submitted to the Faculty of Information Technology  
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Software Engineering**

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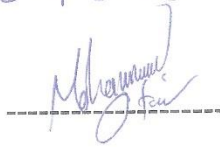
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## **DEDICATION**

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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## Table of Abbreviations

<b>Abbreviation</b>	<b>Full Expression</b>
PC	Personal Computer
MA	Mobile Agent
ACO	Ant Colony Optimization
JADE	Java Agent Development Framework
GA	Genetic Algorithm
NCA	Node Compression Algorithm
ACS	Ant Colony System
PSO	Particle Swarm Optimization
JEE	Java Execution Environment
SI	Swarm Intelligence
AMS	Agent Management System
JDK	Java Development Kit

# DEVELOPMENT OF OPTIMIZED ITINERARY AGENT DESIGN PATTERN USING DEVELOPMENT ALGORITHM

## 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.