Lancaster University

TITLE

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Supervisor

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A thesis submitted in fulfillment of the requirements
for the degree of degreename

in the

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Department of Management Science

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Declaration of Authorship

I, **AHMED**, hereby declare that this thesis entitled, **"Title"**, is all my own work, except as indicated in the text.

The report has been not accepted for any degree and it is not being submitted currently in candidature for any degree or other reward.

Signed: _____

Date: _____

Abstract

(TODO) Give a short (1 page) overview of the work. This should summarise (not advertise) your research project. After reading the abstract the reader should know what problem you are tackling, the techniques you are using, the results you have achieved.

Acknowledgements

(TODO) Thanking anyone who has helped you in any way

Contents

List of Figures

List of Tables

Abbreviations

AK Ahmed Kheiri

MS Management Science

Dedicate this to someone here.

Chapter 1

Introduction

(TODO) Set the scenes. Explain why you are doing this work and why the optimisation problem being solved is difficult (e.g. NP-problem?). Most importantly you should clearly explain what the aims and objectives of your work are. Any interesting arguments from the literature to show the importance of the problem, which may require statistical information? E.g. number of cancelled flights is X%

(TODO) Structure of the thesis. Academic publications produced (if any), including any achievements/highlights

Chapter 2

Literature Review

(TODO) Present a survey of your main approach and an overview of the approaches proposed previously for solving the optimisation problem dealt with in this work

(TODO) Table with the modelling attributes e.g. optimisation , simulation, hybrid, deterministic, stochastic, static, dynamic, objectives and constraint considered, solution approach used , size of instance(s) solved, types of data used (real world vs synthetic), etc

(TODO) Identify the practical and research motivation of this work and the literature gaps

(TODO) How convincing is the authors' argument? (Critical response - comparisons with other research, strengths or weaknesses but in relation to your research)

Chapter 3

Problem Description

(TODO) Present and explain your problem in detail (figures are needed). Provide mathematical formulation of the problem. Characteristics of the problem instances. Visual representation of the instances. Assumptions should be stated clearly

(TODO) Identify: Inputs / Parameters / Outputs / Constraints / Objectives / Potential solution methods

(TODO) Collecting real-world data (if possible) / How data is collected and analysed

Chapter 4

Methodology

(TODO) Describe implementation details, such as, solution representation, initialisation methods, etc

(TODO) Classify the methods (e.g. deterministic, stochastic, etc). Visualise the methods (e.g. flowchart, LLHs, etc)

Chapter 5

Results

(TODO) Develop a checker/evaluator tool

(TODO) Present the results and discuss any differences between the findings and your initial predictions/hypothesis

(TODO) Table with results (e.g. avg, std, min, max) compared (statistically) with methods developed and methods from literature. Analyse the best method components. Charts (e.g. boxplots, obj vs time, LLH utilisation rate, etc). Visualise the solutions

(TODO) Interpret your experimental results - do not just present lots of data and expect the reader to understand it. Evaluate what you have achieved against the aims and objectives you outlined in the introduction

Chapter 6

Conclusion

(TODO) Explain what conclusions you have come to as a result of doing this work. Lessons learnt and what would you do different next time. Please summarise the key recommendations at the end of this section, in no more than 5 bullet points.

6.1 Summary of Work

6.2 Future Work

(TODO) The References section should include a full list of references. Avoid having a list of web sites. Examiners may mark you down very heavily if your references are mainly web sites.

Appendix A

Code Listings

(TODO) Include a full listing of all your code you have written for the project. If your project involves modifying code previously written by others, then you may include this other code as long as you indicate clearly in the code listing what parts have been written by you. Example is provided below:

```
import java.util.*;
import java.util.ArrayList;
import java.util.Random;
import java.util.List;

public class SRIE {
}
```

Appendix B

Test Instances

Appendix C

User Manuals

Appendix D

Raw Data

(TODO) Provide all raw data. If your work involved data collection then this should usually be included in appendices. This may provide supporting evidence for claims made in the main part of the thesis.