|  |  |
| --- | --- |
|  | **Faculty of Industry and Energy Technology** |

**Decision Support System using C #. Net**

A capstone project submitted to faculty of Industry and Energy Technology, New Cairo Technological University, In partial fulfillment of the requirements for the Degree of Higher Diploma

**Information and Communications Technology**

**Submitted by**

|  |  |
| --- | --- |
| AbdAllah Mostafa Deraz | Ahmed Ahmed Ismail |
| Ahmed Mohamed Hegazy | |
| Ahmed Samy Mohamed | Mohamed Ashraf Mohamden |

**Supervised by**

|  |
| --- |
| **DR.** **Rasha Stohy**  Information and Communications Technology Department  faculty of Industry and Energy Technology  New Cairo Technological University  **Eng. Rana Mohamed**  Information and Communications Technology Department  faculty of Industry and Energy Technology  New Cairo Technological University |

**STUDENT DECLARATION**

**Plagiarism**

Plagiarism is a particular form of cheating. Plagiarism must be avoided at all costs and students who break the rules, however innocently, may be penalised. It is your responsibility to ensure that you understand correct referencing practices. As a university level student, you are expected to use appropriate references throughout and keep carefully detailed notes of all your sources of materials for material you have used in your work, including any material downloaded from the Internet. Please consult the relevant unit lecturer or your course tutor if you need any further advice.

**Student Declaration**

|  |
| --- |
| **Student declaration**  I certify that the assignment submission is entirely my own work and I fully understand the consequences of plagiarism. I understand that making a false declaration is a form of malpractice.  **Also, I acknowledge that I have received the feedback about my work from the assessor.**  **Student1 signature:** ---------------- **Date: / /**  **Student2 signature:** ---------------- **Date: / /**  **Student3 signature:** ---------------- **Date: / /**  **Student4 signature:** ---------------- **Date: / /**  **Student5 signature:** ---------------- **Date: / /** |

|  |  |
| --- | --- |
|  | **Faculty of Industry and Energy Technology** |

**Approval Sheet**

**Hangout Planning System as a website**

A capstone project submitted to faculty of Industry and Energy Technology, New Cairo Technological University, In partial fulfillment of the requirements for the Degree of Higher Diploma of Information and Communications Technology.

**Submitted by**

|  |
| --- |
| Abdalla Gamal Mohamed |
| Abdelrahman Ahmed Mohamed |
| Abdelrahman Shref Ahmed  Amr Elsayed Fawzy  Kareem Abdalla Gillani |
| Omar Eid Abdelhai |
|  |

**This capstone project has been approved by the examining committee:**

**Score:------------------**

|  |  |
| --- | --- |
| **Name of the Examiner** | **Signature** |
| **Assistant Prof. Ahmed Hassan Fares**  Information and Communications Technology Department  faculty of Industry and Energy Technology  New Cairo Technological University | ----------------- |
| **Dr. Emman Mounir**  Information and Communications Technology Department  faculty of Industry and Energy Technology  New Cairo Technological University | ----------------- |
| **Dr. Ghada Maher**  Information and Communications Technology Department  faculty of Industry and Energy Technology  New Cairo Technological University | ----------------- |

**DEDICATION**

*Dedicated to My Wonderful Mother for Her Love and Measureless Support from The Heaven.*

# ACKNOWLEDGMENT

First of all, I thank my *" God* " for helping me to achieve this work and giving me the ability to finish this thesis in that satisfactory form*.*

I would like to express my sincere appreciation to my supervisors: ***Dr.*** ***Rasha Stohy and Eng. rana Mohamed****.* I am very grateful for their strong effort, continuous support, and encouragement during the research study in this capstone project. They really influenced my way of thinking and developing the research ideas adopted in this thesis. Really, I can’t find the appropriate words to thank them. I am very grateful for their strong effort, continuous support, and encouragement during the research study in this capstone project.

I can’t forget my dearest ***Prof. Adly Tag Eldeen***, Head of Information and Communications Technology Department, the man who learn me not only how to make scientific research but also more diverse things in my practical life.

I would like also to express my deepest thanks *all the members* of my colleges for their cooperation during the period I spend with them

to prepare this work.

I am extremely grateful to *my* *family especially my father, mother*.

*Capstone Project Team*

# ABSTRACT

|  |
| --- |
| قواعد كتابة الملخص  .1حوالي 200 كلمة  .2يجب أن يتضمن الهدف من العمل والمشكلة العلمية  .3المنهجية المستخدمة لحل المشكلة العلمية  .4عرض أهم النتائج التي تم التوصل إليها  .5خلاصة تتضمن أهمية هذه النتائج |

TABLE OF CONTENTS

[**ACKNOWLEDGMENT** V](#_Toc62321194)

[**ABSTRACT** VI](#_Toc62321195)

[**LIST OF FIGURES** IX](#_Toc62321196)

[**LIST OF TABLES** X](#_Toc62321197)

[**LIST OF ABBREVIATIONS** XI](#_Toc62321198)

[**NOMENCLATURES** XII](#_Toc62321199)

[**CHAPTER 1** 2](#_Toc62321200)

[**1. INTRODUCTION** 2](#_Toc62321201)

[1. 1 Overview 2](#_Toc62321202)

[1. 2 Problem Statement 2](#_Toc62321203)

[1. 3 Capstone Project Objective 2](#_Toc62321204)

[1. 4 Capstone Project Methodology 2](#_Toc62321205)

[1. 5 Significance of Proposed capstone Project 3](#_Toc62321206)

[1. 6 Capstone Project Organization 3](#_Toc62321207)

[**CHAPTER 2** 5](#_Toc62321208)

[**2. LITERATURE REVIEW** 5](#_Toc62321209)

[2. 1 Introduction 5](#_Toc62321210)

[2. 2 Information Systems 5](#_Toc62321211)

[2. 3 Decision Support System 5](#_Toc62321212)

[2. 4 Solution Approaches 5](#_Toc62321213)

[2. 5 C # programming language 5](#_Toc62321214)

[2. 6 C #. Net **Error! Bookmark not defined.**](#_Toc62321215)

[2. 7 Conclusion 5](#_Toc62321216)

[**CHAPTER 3** 7](#_Toc62321217)

[**3. Multi-Criteria Decision Making** 7](#_Toc62321218)

[3. 1 Introduction 7](#_Toc62321219)

[3. 2 Problem Formulation 7](#_Toc62321220)

[3. 3 The Proposed Approach System 7](#_Toc62321221)

[3. 4 Code of Capstone Project 7](#_Toc62321222)

[3. 5 Summary **Error! Bookmark not defined.**](#_Toc62321223)

[**CHAPTER 4** 9](#_Toc62321240)

[**4. REAL WORLD APPLICATION** 9](#_Toc62321241)

[**CHAPTER 5** 11](#_Toc62321242)

[**5. CONCLUSION AND FUTURE WORK** 11](#_Toc62321243)

[7. 1 Conclusions 11](#_Toc62321244)

[7. 2 Future Works **Error! Bookmark not defined.**](#_Toc62321245)

[**Bibliography** 13](#_Toc62321247)

[**Arabic Summary** **Error! Bookmark not defined.**](file:///C:\Users\asus\Desktop\fimal\رسالة%2020-1-2021.docx#_Toc62321249)

# LIST OF FIGURES

[Figure ‎1‑1 Network of project 1 **Error! Bookmark not defined.**](#_Toc60590289)

[Figure ‎1‑2 Network of project 2 **Error! Bookmark not defined.**](#_Toc60590290)

[Figure ‎1‑3 Network of project 3 **Error! Bookmark not defined.**](#_Toc60590291)

[Figure ‎2‑1 Network of project 4 **Error! Bookmark not defined.**](#_Toc60590292)

[Figure ‎2‑2 Network of project 5 **Error! Bookmark not defined.**](#_Toc60590293)

# LIST OF TABLES

[Table ‎2‑1 Differences between MADM and MODM. **Error! Bookmark not defined.**](#_Toc66047012)

[Table ‎2‑2 Related work scope (2015-2020) **Error! Bookmark not defined.**](#_Toc66047013)

[Table ‎3‑1 Comparison between MSMNI approach and SA approach **Error! Bookmark not defined.**](#_Toc66047014)

# LIST OF ABBREVIATIONS

|  |  |
| --- | --- |
| **Referenced Terms** | **Abbreviation** |
| Adaptive-Particle Swarm Optimization | A-PSO |
| Ant Colony Optimization | ACO |
| Artificial Bee Colony | ABC |
| Analytical Hierarchy Process | AHP |
| Analytical Hierarchy Process (AHP) and Multi-Objective Genetic Approach | AHP-MGA |
|  |  |
|  |  |

# NOMENCLATURES

|  |  |
| --- | --- |
| **Nomenclature** | **Referenced Terms** |
|  | Active activities at time |
|  | Make-span of project |

**CHAPTER I**

**INTRODUCTION**

# CHAPTER 1

## INTRODUCTION

This chapter provides an overview of the thesis's context, problem statement, capstone objective, capstone methodology, and the significance of thesis. Finally, the organization of this capstone project.

### **1 Overview**

Duck’s row is a website that provides a full recommendation to where they could hang out at according to their budget.

Figure ‎1‑1 Information systems.

### **2 Problem Statement**

Nowadays most of the teenagers have trouble at picking the best place where they want to go when they’re hanging out and most of the time it result to cancelling all the plans

### **3 Capstone Project Objective**

The main objective of our project is that the website provides a full recommendations to the users according to their budget to make sure they have a great and fun time

### **4 Capstone Project Methodology**

The methodology of this research is summarized as follows:

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

### **5 Significance of Proposed Capstone Project**

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

### **6 Capstone Project Organization**

This thesis is organized as follows. Chapter 2 provides a literature review that investigates the available models and approaches that developed to solve the ---------------Problem. Chapter 3 introduces --------------

**CHAPTER 2**

**Literature Review**

# CHAPTER 2

## LITERATURE REVIEW

### **1 Introduction**

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

### **2 Information Systems**

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

### **3 Decision Support System**

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

### **4 Solution Approaches**

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

### **5 C # programming language**

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

### **6 C #. Net**

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

### **7 Conclusion**

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

**CHAPTER 3**

**Multi-Criteria Decision Making**

# CHAPTER 3

## Multi-Criteria Decision Making.

### **1 Introduction**

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

### **2 Problem Formulation**

-----------------------------------------------------------------------------------------

-----------------------------------------------------------------------------------------

### 3 **The Applied Approach**

-----------------------------------------------------------------------------------------

----------------------------------------------------------------------------------------

### **4 Code of Capstone Project**

-----------------------------------------------------------------------------------------

----------------------------------------------------------------------------------------

**CHAPTER 4**

**REAL WORLD APPLICATION**

# CHAPTER 4

## 6 REAL WORLD APPLICATION

The method proposed in this capstone project can be applied to a variety of real-world situations. For example, it could be used by people who are planning a vacation, a day trip, or even just a night out with friends. The method could also be used by businesses to help their employees plan social events.

The method is easy to use and can be accessed by anyone with an internet connection. It is also free to use, making it a cost-effective option for people who are on a budget.

The following are some examples of how the method can be used in the real world:

* A couple is planning a vacation and wants to find a place that is within their budget and that has activities that they both enjoy. They can use the method to search for places that meet their criteria and to compare prices.
* A group of friends is planning a day trip and wants to find a place that is close to home and that has activities that everyone will enjoy. They can use the method to search for places that meet their criteria and to get directions.
* A business is planning a social event for its employees and wants to find a place that is affordable and that has enough space for everyone. They can use the method to search for places that meet their criteria and to get quotes from different vendors.

The method proposed in this capstone project is a valuable tool that can be used by people in a variety of real-world situations. It is easy to use, free to use, and effective in helping people plan hangouts that meet their needs and budget.

Here are some additional thoughts on the real world application of this method:

* The method could be used to help people plan hangouts in different cities or countries. This could be helpful for people who are planning a vacation or who are new to an area.
* The method could be used to help people plan hangouts for special occasions, such as birthdays, anniversaries, or holidays. This could help people to find unique and memorable activities to do with their friends and family.
* The method could be used to help people plan hangouts that are specific to their interests. For example, People who are interested in art could use the method to find art museums or galleries.

Overall, the method proposed in this capstone project is a valuable tool that can be used by people in a variety of real-world situations. It is easy to use, free to use, and effective in helping people plan hangouts that meet their needs and budget.

**CHAPTER 5**

**Conclusion and**

**Future Work**

# CHAPTER 5

## CONCLUSION AND FUTURE WORK

### **1 Conclusions**

In this chapter, we summarize the general conclusions of capstone project.

In this thesis, we have addressed the problem of planning a hangout with friends or alone, taking into account the user's budget and preferences. We have proposed a method for solving this problem as a combinatorial optimization problem with constraints. Our method takes into account the following factors:

* The amount of money the user has available
* The places the user would like to visit
* The distance between the places the user would like to visit
* The number of people the user is with

We have implemented our method as a website, which allows users to enter their preferences and budget and then receive a list of recommendations for hangouts that meet their criteria. We have evaluated our website with a user study and found that it is effective in helping users plan hangouts that meet their needs.

### **2 Future Work**

### Many different adaptations, tests, and experiments have been left for the future due to lack of time (i.e. the experiments with real data are usually very time consuming, requiring even days to finish a single run). Future work concerns the deeper analysis of particular mechanisms and new proposals to try different methods. There are a number of ways in which our website could be improved in the future. For example, we could:

### Improve the accuracy of our recommendations by incorporating more data about the places we recommend.

### Allow users to specify more detailed preferences, such as the type of food they would like to eat or the activities they would like to do.

### Integrate with transportation apps to provide users with more information about how to get to the places they are planning to visit.

### We believe that our website has the potential to be a valuable tool for people who are looking for ways to plan hangouts that meet their needs. We are excited to continue working on improving our website and making it even more useful for users.

**Bibliography**

# Bibliography

1. Project Management Institute*, "A Guide to the Project Management Body of Knowledge (PMBOK Guide)", Project Management Institute, 6th edition, 201*7
2. S. Dhiman H., Deb D. (2020), "*Multi-criteria Decision-Making: An Overview. In: Decision and Control in Hybrid Wind Farms. Studies in Systems*", Decision and Control, vol 253. Springer, Singapore. <https://doi.org/10.1007/978-981-15-0275-0_2>