UTeM SEARCHING LOCATION SYSTEM BASED ON IMAGE

MUHAMAD AKMAL SADIQ BIN MOHD NOR

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

BORANG PENGESAHAN STATUS TESIS*

JUDUL: UTeM SEARCHING LOCATION SYSTEM BASED ON IMAGE

SESI PENGAJIAN: 2010 / 2011

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Alamat tetap: No.51-B,Kg Parit Raja,
Jln Dato' Hj. Kosai , 84000,
Muar, Johor, Malaysia.

Tarikh: 12/7/2011

(TANDATANGAN PENYELIA)

PN. NORZIHANI BINTI YUSOF
Nama Penyelia

Tarikh: 12/7/2011

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MUHAMAD AKMAL SADIQ BIN MOHD NOR

The report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Artificial Intelligence)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2011

DECLARATION

I hereby declare that this project report entitled

UTeM SEARCHING LOCATION SYSTEM BASED ON IMAGE

is written by me and is my own effort and that no part has been plagiarized without citation.

STUDENT : _____ Date: 12/7/2011
(MUHAMAD AKMAL SADIQ BIN MOHD NOR)

SUPERVISOR: _____ Date: 12/7/2011
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DEDICATION

I dedicate a special thanks to my beloved parents who giving me motivation, support and courage through the completion of my final project. I also dedicated a special thanks to my PSM supervisors, Puan Norzihani Binti Yusof for all the advices, comment and supports that have been given to me until I can finish my PSM successfully. I also want to thanks to all my friends that also always give support and motivation while doing this PSM until I can finish my PSM completely.

ACKNOWLEDGEMENTS

Firstly, I want to thanks to Allah for given me an opportunity to complete my PSM project named UTeM Searching Location System Based on Image. Besides that, I want to thanks my PSM supervisors, Puan Norzihani Binti Yusof for giving me support, advice and useful comment while completing this project. I also want to thanks my PSM evaluator, Cik Nuzulha Khilwani Binti Ibrahim and to all my fellow friends that have give me support until I can finish my PSM project smoothly and successfully. I also would like to thanks to my parents for given me courage and support to motivate and inspire me to complete this project until the end.

ABSTRACT

UTeM Searching Location System Based on Image is a system that was developed to help people, new student and UTeM's staff to identify UTeM buildings and also identify the location of the UTeM building. Using only one picture that has image of UTeM building in it, this system can quickly identify the building information and tell the user the location of the building. The system that has been developed will only can be used to identify all buildings in UTeM are only. The UTeM building in this system will be detect and recognize by using one of the technique of image processing. This system will identify the building image in the picture, provide the information and also detect the location of the building in UTeM map provided in the system

ABSTRAK

UTeM Searching Location System Based on Image merupakan sebuah sistem aplikasi yang dibangunkan bagi membantu orang ramai atau para pelajar baru serta para pekerja UTeM untuk mengenali bangunan-bangunan yang terdapat di UTeM serta kedudukan bagi setiap bangunan tersebut di dalam kawasan UTeM. Dengan hanya meggunakan gambar-gambar yang mengandungi imej bangunan UTeM, sistem ini dapat mengesan terus identiti bangunan tersebut serta memberitahu kepada penguna sistem tentang lokasi bangunan tersebut di atas peta UTeM. Sistem yang dibina ini hanya boleh mengesan kedudukan bangunan-bangunan di kawasan UTeM sahaja. Imej bangunan UTeM di dalam sistem ini dikesan dengan menggunakan salah satu teknik pemprosesan imej dimana system ini akan mengesan adakah imej tersebut adalah imej bangunan di kawasan UTeM, menyediakan maklumat berkaitan dengan bangunan UTeM serta mengesan lokasi bangunan tersebut di atas peta UTeM.

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INTRODUCTION

1.1 Project Background

Searching location system which are currently used does not provide a good information and it actually displayed the result randomly based on image similarity and some of the result that are not needed all will be display. Because of that, user can't get the exact information about the image location.

Compare with other searching system which is using text, image based searching actually not easy to build because it may have too many thing that must be considered for example image angle, image resolution, image quality and size. Some of the searching systems using images currently exist nowadays only provide random result for the user.

Therefore this system will be design and develop to help user to find the same location in the image and provide useful information about the location in the image. The location in the image will be identified accurately based on image angle, resolution, size and quality of the image.

1.2 Problem Statement

Nowadays, there were many searching system that have been developed including searching engine in web application for example Google, Yahoo and many more. We can say that all the searching systems nowadays were mostly using text and keyword to retrieve data or information needed from the database because it is easier in term of user control and also the system management. Since it is a human nature that word or text are not easily can be remembered, sometimes user will insert the wrong keyword and it make the system provide wrong information. There is not all searching system nowadays used text as a keyword. Some of the developer has developed a location searching system that used image as a keyword because images actually are more easier to be remember rather than text or number but until know it can't provide the desired data output or information needed for the user accurately.

1.3 Objectives

The objective of this project:

i. Provide the best possible output for user
ii. Improve the efficiency and the accuracy of data retrieval
iii. Provide useful information for the user
iv. Help the user to find the location of the image accurately

1.4 Scope

This system can be used by any user. This system will use image or picture related to the location in UTeM. By using the image, this system will find the exact location of the background of the picture or image. This system will focus on displaying the location image same with the image background and display the information about the location.

1.5 Project Significance

The purpose to develop this system is to provide useful information about the image location in UTeM area. Besides that, this system will be useful for people or visitor which did not familiar with building location in UTeM area. Through this system, searching process will become easier for user without waste any time or energy.

1.6 Expected Output

UTeM Searching Location System Based on Image will provide and produce information about the building and also the location which will be identified by the system from the image.

1.7 Conclusion

System for searching and locating a location is actually produce many benefit to the user in term of less time, cost and energy used to locate any location that they don't know. However, until now, Searching location system using image is not widely used and some of it is still under research. Further explanation about literature review and project methodology for this project will be discussed in the next chapter.

CHAPTER II

LITERATURE REVIEW AND METHODOLOGY

2.1 Introduction

In this chapter, we will discuss more on literature review and methodology of this project. The explanation of fact and finding, project domain, project methodology, project requirement, and milestones for this project will be included.

2.2 Facts and Finding

There are many types of searching process using image has been used with many different techniques. To determine the basic information on what we need and what we must do for this project, the searching process of research and finding is done by collecting the information from the internet, books, journal and etc. This process is done to gather a useful technique and information as a contribution for the successful of this project.

2.2.1 Domain

This project domain is actually about image processing technique for image recognition system using Matlab software. This project will develop a searching system using image that will be build using Image Processing Toolbox in Matlab. In this project, image that will be used and the location that will be determined are within UTeM area location.

2.2.2 Existing System

Image recognition technique is a technique used to recognize the similarity within the image based on many factors related to the image. There are many research has been done and many system has been develop based on image recognition but each system and research has used different method, technique and algorithm for example neural network and genetic algorithm.

2.2.3 Technique

This project is developed with the given task to recognize image similarity with the image exist in database and produce an information about the location to the user. The system function is same as other searching system based on word, but instead using word, this system will used image to begin the searching process.

Image Processing Toolbox in Matlab R2009a is a tool that can be used to do any kind of work as long as it related to image processing such as image filtering or image recognition. This tool will be used in the system to insert an

image processing technique and algorithm inside the system so that the system can do the image recognition process.

2.3 Project Methodology

In this project, the methodology used is frame work methodology of the overall process of developing information analysis through a multi step process investigation of initial requirement through planning, analysis, design, and testing. There are many different model and methodologies, but each generally consists of a series of defines steps or stages.

2.3.1 Waterfall Methodology

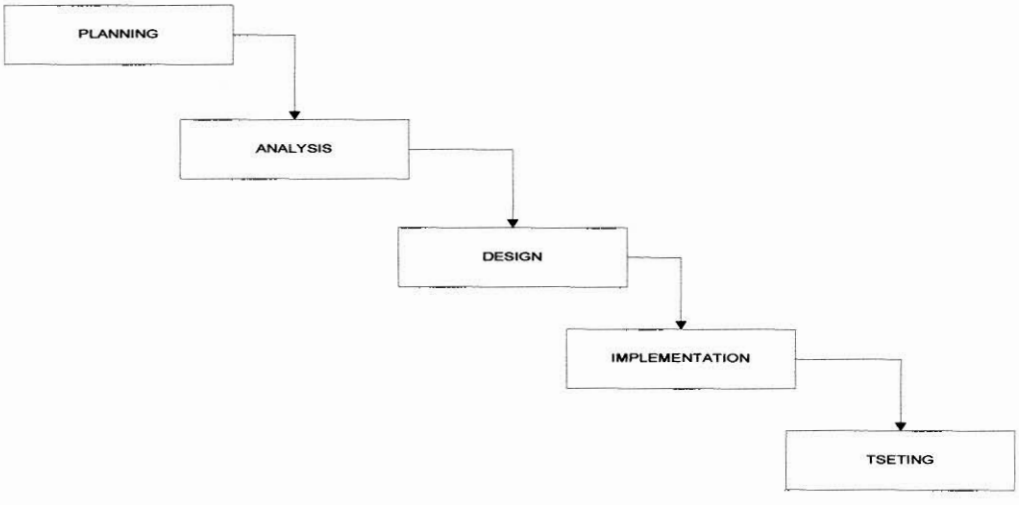

Figure 2.1 Waterfall Methodology

2.3.1.1 Planning Phase

In planning phase, the project requirement, process and expected output will be determined. There are many factors that need to be consider in order make sure that this project can produce the expected output and result.

2.3.1.2 Analysis Phase

In analysis phase, all the information will be gathered and analyses. While, to understand the applications, fact finding technique like documents reviews, surveys, observations and samplings must be made in order to identify any application requirements, software requirements and hardware requirements. The system design and technique will be analyses in this phase to ensure whether it can be used to produce the expected output based on the system requirement.

2.3.1.3 Design Phase

In this phase, blueprint of the system will be design in term of interface and algorithm. The design of the system will be develop based on all requirement analysis, the system interface and all the function that will be created in the system will be identified. Matlab R2009a will be used in this design phase.

2.3.1.4 Testing Phase

The testing phase is the phase where the evaluation of system function, algorithm and output will be done. The output will be evaluated whether it is the output that the systems need to produced (expected output). Furthermore, the system improvement also will be done in this phase.

2.4 Project Requirement

This project consist several requirement that are need to be fulfill which are software requirement, hardware requirement and other additional requirement.

2.4.1 Software Requirement

Software requirement for this project are:

i) Microsoft Office 2007 (Project report writing)

ii) Microsoft Visio 2007 (Network design development)

iii) Microsoft Project 2007 (Gantt chart development)

iv) Microsoft Power Point 2007 (Slide presentation)

v) Adobe Acrobat Reader 9 (Open .pdf file)

vi) Microsoft Windows XP (Computer operating system)

viii) MATLAB R2009a (System Development)