Universiti Teknologi MARA

Car Plate Number Reader (CPNR) using Image Processing for Polis Bantuan UiTM Jasin

Mohammad Syamil Bin Abd Maulop

Thesis submitted in fulfilment of the requirements for Bachelor of Information Technology (Hons.) Information Systems Engineering Faculty of Computer and Mathematical Sciences

January 2017
STUDENT’S DECLARATION

I certify that this report and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

........................................................
MOHAMMAD SYAMIL BIN ABD MAULOP
2014967677

JANUARY, 2017
ABSTRACT

Polis Bantuan (PB) department is a unit in UiTM Jasin that was formerly known as the Security Unit that serves to create and maintain the ideal atmosphere, peace and security on campus. The mission of this unit is to provide professional service, integrity and accountability. Polis Bantuan (PB) UiTM Jasin given full responsibility for security management around campus. This project is focused on the process to generate fine ticket, which is involved of process to get the vehicle plate number by using image processing technique which is Optical Recognition Character (OCR) and the details of the vehicle including the vehicle’s owner details. This system will help the user to search the details through the image of the vehicle plate number that captured by the user. This can help to reduce the process that need to be done and time taken to check for the details. This project is carried out with an aim to implement the Car Plate Number Reader (CPNR) using the three-tier architecture and Mobile Application Development Life Cycle (MADLC) is carried out as methodology to develop the system. However, this project only covers three phases and the phases that involved are Identification, Design and Develop. As a result, a prototype of Car Plate Number Reader (CPNR) is produced together with documentations of Software Requirements Specification (SRS) and Software Design Document (SDD). Thus, for future works this mobile application can be used by all students and staff at all UiTM in Malaysia and hope it can be used by all platforms of mobile application in the world. Besides that, this mobile application can be enhanced in future by adding more features and enhanced the user interface. This will increase the performance and productivity of the mobile application that user can maximize it the usability.
# TABLE OF CONTENT

## CONTENTS

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERVISOR’S APPROVAL</td>
<td>ii</td>
</tr>
<tr>
<td>STUDENT’S DECLARATION</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>iv</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>v</td>
</tr>
<tr>
<td>TABLE OF CONTENT</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xi</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>xii</td>
</tr>
</tbody>
</table>

## CHAPTER ONE: INTRODUCTION

1.1 Background of Study                        | 1    |
1.2 Problem Statement                          | 3    |
1.3 Aim                                        | 3    |
1.4 Objective                                  | 3    |
1.5 Project Scope                              | 4    |
1.6 Project Significance                       | 4    |
1.7 Expected Result                            | 4    |
1.8 Chapter Summary                            | 5    |

## CHAPTER TWO: LITERATURE REVIEW

2.1 Overview of Image Processing                | 6    |
2.2 Image Acquisition                          | 7    |
2.2.1 Image Acquisition Device                 | 8    |
2.2.2 Digital Image Representation             | 9    |
2.3 Image Enhancement                          | 9    |
2.4 Image Segmentation                         | 10   |
2.4.1 Edge Detection                           | 11   |
2.5 Character Recognition                      | 12   |
2.5.1 Optical Character Recognition (OCR)      | 13   |
2.6 Discussion                                 | 14   |
CHAPTER THREE: METHODOLOGY

3.1 Overview of Methodology

3.2 Mobile Application Development Life Cycle (MADLC)
   3.2.1 Identification Phase
   3.2.2 Gather and Analyse Requirements
   3.2.3 Knowledge Recovery
   3.2.4 Design Phase
   3.2.5 Design Model
   3.2.6 Design System Interface
   3.2.7 Document the System Design
   3.2.8 Development Phase
   3.2.9 Develop Car Plate Number Reader (CPNR)

3.3 Hardware and Software Requirement
   3.3.1 Hardware Requirement
   3.3.2 Software Requirement

3.4 Chapter Summary

CHAPTER FOUR: RESULTS AND ANALYSIS

4.1 Requirement gathering and Analysis Phase
   4.1.1 Gather and Analyse Requirement
   4.1.2 Use Case Diagram
   4.1.3 Use Case Description
   4.1.4 Activity Diagram

vii