View metadata, citation and similar papers at core.ac.uk
brought to you by CORE
provided by Universiti Teknologi MARA Institutional Repository

UNIVERSITI TEKNOLOGI MARA

SMART HANDICAPPED PARKING SYSTEM USING FINGERPRINT

HERWAN BIN MOHD JEMI

BACHELOR OF COMPUTER SCIENCE (Hons.)

FEBRUARY 2016

STUDENT DECLARATION

I certainly that this report and the project to which it refer is the product of my own work and that any idea or quotation from the work of another people, published or otherwise area fully acknowledged in accordance with the standard referring practise of the discipline.

……..
HERWAN BIN MOHD JEMI
2013770275

FEBRUARY 4, 2016

ABSTRACT

The main purpose of this study which is to proposed a systematic handicapped parking management where it focus to tackle the issue of exploitation on handicapped parking facilities. The aim of project development which is to solve the problems that faced by disabled person in handicapped parking bay. Therefore this project propose the Smart Handicapped Parking System using the fingerprint method for prevention of duplication and also misuse of handicapped parking bay. Thus, current method in managing the parking is not efficient as it is denying the real user right. Smart Handicapped Parking System is developed to automatically authenticate registered user and unlock the barrier at handicapped parking bay. By using Arduino board and fingerprint reader, the system read fingerprint of the person, and compare with registered user in database. The fingerprint has been choose to be the most suitable method due to the uniqueness of fingertip itself, where this features cannot be duplicate and misuse by anyone. The Arduino microcontroller is used for developing the prototype version due to the size and also the capabilities to supply most important hardware component that related to this project such as, Micro servo, Ultrasonic sensor, Fingerprint reader, and also the Arduino board. This project capable to be a stand-alone project without need to be connected through computer after the configuration process. Besides that, this smart parking system has been tested with real disabled person and leaving with the positive feedback as expected. However, this smart parking system is excellent to be used not only for handicapped parking, but also to other closed parking system, such as residential parking, monthly paid parking space and etc. In the future, this project will be able to be widely implement in larger area by having the online database for online synchronization.

Keywords*: parking system; smart parking; Arduino board;*

TABLE OF CONTENTS

CONTENTS			PAGE
SUPERVISOR APPROVAL			ii
DECLARATION			iii
ACKNOWLEDGEMENT			iv
ABSTRACT			v
TABLES OF CONTENTS			vi
LIST OF FIGURES			xii
LIST OF TABLES			xiv
LIST OF ABBREVIATIONS			xv
CHAPTER ONE: INTRODUCTION			
1.1	Project Background		1
1.2	Problem Statement		2
1.3	Objective		3
1.4	Scope		3
1.5	Significance		4
	1.5.1	Saving Cost for Provider or Organization of Handicapped Parking	4
	1.5.2	Benefits for Disabled Person	5
	1.5.3	Prevention toward Misuse of Handicapped Parking Facilities	5
1.6	Expected Outcome		5
1.7	Summary		6
CHAPTER TWO: LITERATURE REVIEW			
2.1	Smart Parking System		7

2.1.1 Benefit of Parking System 7
2.1.2 Categories of Parking System 8
2.1.2.1 PGI 9
2.1.2.2 Transit-based Information System 9
2.1.2.3 Smart Payment System 10
2.1.2.4 E-parking 10
2.1.2.5 Automated Parking System 10
2.1.2.6 Handicapped Parking Bay 11
2.1.3 Comparison of Smart Parking Categories 11
2.1.4 Car Park Controlled Detection Sensor and its Implementation 12
2.1.4.1 Implementation of Vehicles Detection Technologies 12
2.1.4.2 Implementation of Vehicles Detection Technologies in Commercial System 13
2.1.4.3 Implementation of vehicles Detection Technologies in Single Parking Lot 13
2.2 Biometric 14
2.2.1 Implementation of Biometric in a Smartphone System 15
2.2.2 Implementation of Fingerprint in Conventional System 17
2.2.3 Type of Fingerprint Sensor 17
2.2.3.1 Optical Fingerprint Sensor 17
2.2.3.2 Capacitive Fingerprint Sensor 19
2.2.3.3 Thermal Fingerprint Sensor 19
2.2.4 User Feedback in Various Fingerprint Implementation Area 19
2.3 Image Processing 22
2.4 Algorithm Process 22
2.4.1 Fingerprint Matching Algorithm Technique in Fingerprint 23