

Universiti Teknologi MARA

**iMeD: Self-Monitoring Mobile
Application for Diabetic Patient**

Nurul Izzati Binti Wahid

**Thesis submitted in fulfilment of the
requirements for Bachelor of Computer
Science (Hons.) Faculty Computer and
Mathematical Sciences**

July 2020

SUPERVISOR APPROVAL


iMeD: SELF-MONITORING MOBILE APPLICATION FOR DIABETIC PATIENT

By

NURUL IZZATI BINTI WAHID
2018424832

The thesis was prepared under the supervision of the project supervisor, Mohammad Bakri bin Che Haron. It was submitted to the Faculty of Computer and Mathematical Sciences and was accepted partial fulfillment of the requirements for the degree of Bachelor of Computer Sciences (Hons.)

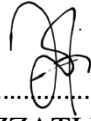
Approved by


.....
Mohammad Bakri bin Che Haron
Project Supervisor

JULY 11, 2020

STUDENT DECLARATION

I certify that this thesis and 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.



.....
NURUL IZZATI BINTI WAHID
2018424832

JULY 11, 2020

ABSTRACT

Diabetes is a common disease, and it can be classified as one of the non-communicable diseases (NCDs) in the world. It can be defined as a group of metabolic diseases that were identified by high blood sugar, which is results from a deficiency of insulin action, insulin secretion, or both. In pursuance of achieving and maintaining the blood sugar levels, diabetes self-care plays an important role. Those who are less adherent to diabetes self-care can exhibit a deterioration of glycemic levels. However, most of the patient has a poor understanding of the specific component of a well-balanced diet and the calories recommendation serving. Besides, they also faced difficulties to remember the timing to take their medication timing. Further to this, a self-monitoring mobile application named iMeD has been developed to overcome this problem. This application has implemented Data Visualization technique to enable the application to display information in a graphical format to give the user a better understanding of their calorie and carbohydrates intake per day. Besides, iMeD also able to recommend food based on their current restriction on daily calorie and carbohydrates intake by using Content-Based Filtering techniques. These can help the user who has a poor understanding of calorie recommendation serving. Also, iMeD will help to remind them about their medication and meal timing by using Push Notification. The significance of this project is it will develop an application that helps a diabetic patient by monitoring their diet and medication intake per day. The main reason this application being developed is to help the diabetic patient to prevent them from over intake carbohydrates in their daily meal because carbohydrates intake is correlated to blood sugar. In future, instead of focusing one operating system platform, iMeD may be supported by both platform, which are Android and iOS. Besides, the compatibility issue can be solved within the enhancement phase.

Keywords: Diabetes, Monitoring System, Data Visualization, Content-Based Filtering, Push Notification, Mobile Application

TABLE OF CONTENT

CONTENT	PAGE
SUPERVISOR APPROVAL	i
STUDENT DECLARATION	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
TABLE OF CONTENT	v
LIST OF FIGURES	viii
LIST OF TABLES	xi

CHAPTER ONE: INTRODUCTION

1.1	Background Study	1
1.2	Problem Statement	3
1.3	Project Objective	4
1.4	Project Scope	4
1.5	Significance of Study	5

CHAPTER TWO: LITERATURE REVIEW

2.1	Diabetes Mellitus	6
2.1.1	Type-1 Diabetes Mellitus	7
2.1.2	Type-2 Diabetes Mellitus	8
2.1.3	Gestational Diabetes Mellitus	9
2.1.4	Comparison between the Type of Diabetes	10
2.2	Calorie and Carbohydrate	13
2.3	Health Monitoring System	16
2.3.1	Mobile Health Monitoring System	16
2.3.2	Remote Health Monitoring System	17
2.3.3	Wearable Health Monitoring System	19
2.3.4	Conclusion	20
2.4	Reminder System	21
2.4.1	Short Message Service (SMS)	22
2.4.2	Email Notification	23
2.4.3	Push Notification	23
2.4.4	Conclusion	24
2.5	Data Visualization	25