3D AUGMENTED REALITY FOOD CALORIE TRACKER

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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CATATAN: * Tesis dimaksudkan sebagai Laporan Akhir Projek Sarjana Muda (PSM)
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3D AUGMENTED REALITY FOOD CALORIE TRACKER

WONG WAI MUN

This report is submitted in partial fulfilment of the requirements for the
Bachelor of Computer Science (Media Interactive)

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2015

DECLARATION

I hereby declare that this project entitled

3D AUGMENTED REALITY FOOD CALORIE TRACKER

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

STUDENT : _____ Date : 27/8/2015.

(WONG WAI MUN)

SUPERVISOR : _____ Date : 27/8/2015

(PN. NORAZLIN BINTI MOHAMMED)

DEDICATION

This project is dedication to my beloved family and friends who always give me support throughout the whole project. Besides that, this project also dedicated to my supervisor, Pn Norazlin binti Mohammed for guiding and helping me to complete my final year project.

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ABSTRACT

Nowadays, Malaysia is one of the country which have the highest rate of obesity in Asia. A lot of Malaysian still does not aware of this issue yet. The main reason of this issue is due to the popularity of fast food among peoples. Most of these fast food do contain a high calorie. Nowadays, Peoples like fast and efficient service which is the one of the service that fast food restaurant provided. Moreover, fast food restaurant branches is keep on increasing. Therefore, a mobile application which applied marker-based Augmented Reality to track the fast food calorie has been introduced and developed. Augmented Reality is an advanced technology which allows computer generated virtual imagery information that need to be registered in 3D and overlaid onto a live direct or indirect real-world environment in real time. By applying this technology, user able to have a more interactive way in tracking calorie of those fast food. This project is developed into a mobile application. This mobile application has implemented marker within printed fast food menu. The mobile application is able to be downloaded from the QR code on the fast food menu.

ABSTRAK

Pada masa kini, Malaysia merupakan salah satu negara yang mempunyai kadar tertinggi obesiti di Asia. Banyak orang masih tidak sedar tentang isu ini. Punca utama isu ini adalah kerana populariti makanan segera di kalangan bangsa-bangsa. Kebanyakan makanan segera ini mengandungi kalori yang tinggi. Pada masa kini, orang suka perkhidmatan yang cepat dan cekap dimana ini merupakan salah satu perkhidmatan yang restoran makanan segera disediakan. Di samping itu, cawangan restoran makanan segera semangkin meningkat. Oleh itu, aplikasi mudah alih yang berdasarkan *marker-based Augmented Reality* untuk mengesan kalori makanan segera telah diperkenalkan dan dibangunkan. Augmented Reality adalah teknologi canggih yang membolehkan cetakan komputer maklumat imej maya yang perlu didaftarkan dalam 3D dan dilapisi ke persekitaran dunia sebenar secara langsung atau tidak langsung dalam masa sebenar. Dengan menggunakan teknologi ini, pengguna mempunyai cara yang lebih interaktif dalam pengesanan kalori makanan segera. Projek ini dibangunkan sebagai aplikasi mudah alih. Aplikasi mudah alih ini adalah penanda decetakkan dalam menu makanan segera. Aplikasi mudah alih boleh dimuat turun dari kod QR pada menu makanan segera tersebut.

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LIST OF ABBREVIATIONS

2D	**-Two-demension**
3D	**-Three dimension**
FTMK	**-Fakulti Teknologi Maklumat dan Komukasi**
OS	**-Operating system**
AR	**-Augmented Reality**
iOS	**-iPhone Operating System**
KFC	**-Kentucky Fried Chicken**
BMI	**-Body Mass Index**
BMR	**-Basal Metabolic Rate**
PSM	**-Projek Sarjana Muda**
SDK	**-Software Development Kit**
ADT	**-Android Developer Tools**
PC	**-Personal computer**
UTeM	**-Univeriti Teknikal Malaysia Melaka**

LIST OF ATTACHMENTS

CHAPTER I

INTRODUCTION

1.1 Introduction

Nowadays, people are getting more busy and busy with their lifestyle and because of that, they are more often taking the fast food for their daily meals. According to the report by Euromonitor International (2012), casual dining is gaining popularity, due to increasing urbanization in Malaysia and changing of lifestyle in urban areas where they prefer to dine out instead of cooking at home. Along with Malaysia's development and changing of lifestyle, restaurants in Malaysia have gained a good growth in term of sales and number of new outlets opened. There are more than 3000 fast food outlets in Malaysia (Euromonitor International, 2012). But they have ignore the calories contain in the food and causes a lot of disease. For instance obesity, diabetes, high blood pressure and so on. All of these disease can be avoid if peoples are concern with their daily meals.

Not surprisingly that Kentucky Fried Chicken (KFC) is the most successful franchise restaurant and dominates market in Malaysia. There are more than 500 outlets in Malaysia

and it still counting while McDonald's has more than 200 of restaurants located nationwide and it was expected that 20 to 25 restaurants will be expanding annually. Euromonitor International (2012) reported that KFC and McDonald's demonstrated growth in sales in 2011. Malaysian had the highest rate of diabetics in Asia and the graph is still increasing. Currently, there is alot of gadget device which can scan and calculate the nutrition contain in the foods or drinks. For instance, Fooducate, FoodScanner, Calorie Counter TellSpec and so on. Through research conducted by the researcher, they found out that not really much people wear these device.

So, this project is to create an application with augmented reality which can scan the calories for the fast food for example burger, French fries, fried chicken, carbonate drinks and so on. User can scan through the marker on a menu and the item will show up in a 3D view and the calories will show beside the item.

1.2 Problem statement

1.2.1 Malaysia has the highest rate of diabetics in Asia.

An alarming 3.6 million adults are estimated to be affected by diabetes in Malaysia, according to the Obesity Prevention Council President, Jong Koi Chong. According to Jong, the number of diabetics was very high and has put Malaysia as the number one country in Asean for having the highest number of diabetics and sixth in the western pacific region. During the 4th National Diabetes Conference here Friday, Jong said compared to 2006 where only 8.6 percent adults in Malaysia had diabetes, the most recent study done in 2011 showed 15.2 percent adults were diabetic.

1.2.2 Fast food branches in Malaysia is keep on increasing.

QSR Brands, the operator of KFC and Rasamas, leads fast food sales with a 40% of value sales (MYR1.8 billion) in 2013. The company's success is partly due to rapid outlets expansion for KFC, which grew from 551 outlets in 2012 to 579 outlets in 2013. Between 1999-2003, the total number of outlets for the Malaysian fast food market increased by 34.5% and the fast-food sector achieved 7% of Compound Annual Growth Rate (Muhammad Fazli, 2006).

1.2.3 Nutrition gadget is not getting a good response from Malaysian

From the user review, some of the nutrition gadget has limited content, slow respond and so on. This causes peoples feel frustrated to use those device. Besides that, the calories shown is not correct also. Limited feature is also one of the reason. Some device will calculate the BMI of the user but some will not.

1.3 Objective

1.3.1 To study how Augmented Reality can be implemented in detecting fast food calories.

Implementation of Augmented Reality in nutrition area is not that famous compared to other area for example entertainment. This project is create to create an application to detect fast food calories. Not really much project use augmented reality in nutrition area. So, this project is to investigate how to apply augmented reality in nutrition area.

1.3.2 To design a mobile application where people can scan for the fast food calories with their device by tracking the marker.

An augmented reality mobile application will be create with user friendly design and interface. A wide database will also be created for the application. User can scan the item's marker with their device to get the calories content for the item from the database.

1.3.3 To create a food menu with marker to bring awareness to the user in their eating habits.

The user scan the marker with their device and choose the correct meals or food in order to control their daily calories intake. If the calories intake had exceeded the normal rate, the application will show alert or message to inform the user. Peoples should take care of their calories intake in order to take care of their health and prevent the rising of diabetic statistic in Malaysia.

1.4 Scope

1.4.1 This application mainly focus on fast food.

Fast food restaurant in Malaysia is keep on increasing due to the fast and convenient service. Most of the peoples are having these fast food due to their busy lifestyle. So this project only focus on fast food for instance burger, French Fries, carbonated drinks, friend chicken and so on.

1.4.2 Target user will be children, parents, working peoples and teenagers.

Nowadays, almost all age of people are taking fast food for their daily meals. So, this application is target for all age of people. Fast food is getting a whelming response in all peoples.

1.4.3 This application is use to scan the fast food calories. The database will contain most of the fast food calories.

At the end of the project, an application with augmented reality will produce and this application is use to scan the marker on a menu where the calories of those fast food will show on the device. A menu with food image and the marker will be produce. This application can be downloaded to any device with scanner.

1.5 Project Significance

Basically, all age of peoples who takes fast food frequently will have benefits by using this application. These peoples will aware for their food intakes and health. Besides that, these people have less chance of getting diabetes or obesity with the healthy and balanced food intake. With this, the diabetic statistic of Malaysia can be control.

This project will help to prevent the diabetics and obesity statistic in Malaysia from increasing. This project will also help peoples have a healthier lifestyle with having a balance diet which is whole grains, proteins, fruits and vegetables. User will give their children a balanced diet easily with this application. This application will also give awareness to those Y-generation teenagers.

1.6 Conclusion

At the end of this project, a *3D Fast Food Calories Scanner Mobile Application* will be create to improve the existing system for food calorie tracker. This application will provide a fast and accurate respond, and a wide content of component and features to the user. While user scan the marker, a 3D model of the item will be shown up and the calorie for that item will show beside the item. This mobile application is downloadable into any device with a scanner. This application will use the scanner from the device to track for the item marker and bring out the item model and details from the database.

This application will help not only the elders, but also the youngsters since nowadays fast food is so famous in this world. The most concern thing is the health of these peoples. With this application, user can control their calories intake per meal especially the kids. Nowadays, kids are adicted to fast food, and with this application, the parents can control the nutrition intake for themselves and their children.

This chapter is all about the introduction of this project. Next, this project will proceed to the next chapter which is literature review. In next chapter, it will discuss the domain of the project, existing system, project methodology and project requirements.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

3D Fast Food Calories Tracker is the system that allow people to scan the calorie contain in the fast food. However, this project needs some findings and research to support. Therefore, the creation of the literature review is one of the most essential parts to do. Literature review requires many skills which including library research and logical arrangement of the information. It also act as a summary of previous research on a topic. The aim of literature review is to help in explaining on how the question to be investigated fits into larger picture and why it being approached. This allows the reader to be brought up to date regarding the date of research in the field and familiarizes them to any contrasting perspectives and viewpoints in the topic. Accurate information will strengthen the idea of the development. Project methodology is a management and a discipline, which can bring significant benefits to organization. There are a number of frameworks available for defining projects and for managing their implementation. Basically, there are process-oriented, data-oriented and object-oriented approaches.