THE DEVELOPMENT OF WEDDING DRESS FITTING USING AUGMENTED REALITY BY TRACKING SHOULDER'S MEASUREMENT

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THE DEVELOPMENT OF WEDDING DRESS FITTING USING AUGMENTED REALITY

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This report is submitted in partial fulfillment of the requirements for the Bachelor of [Computer Science (Media Interactive)] with Honours.

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
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2021

DECLARATION

I hereby declare that this project report entitled

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DEDICATION

To my beloved family members, friends and supervisor who supported me all this while.

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I would like to thank Mdm Norazlin binti Mohammed for giving assistant to complete this project successfully. She gave me an opportunity to develop Augmented Reality application that I never learn before.

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ABSTRACT

LaFame Dressing Room is a marker-less based Augmented Reality application that enable user to try on the wedding dress of LaFame Bridal Mansion in virtually. In this era, the technology of Augmented Reality is widely use in the field of games, education and so on. Choosing a weeding dress is a must for a bride before wedding day. A bride always need long time to choose and try the wedding gown. Furthermore, the pandemic of Covid-19 cause brides cannot go out from home easily. This application with the features of 3D model wedding gown and virtual fitting room can help brides to know about the details of dress and how it looks on the brides. In this project, open source software like Android Studio and Blender will be used to develop Augmented Reality application.

ABSTRAK

LaFame Dressing Room adalah satu applikasi yang mempunyai AR marker-less yang membolehkan pengguna pakai gaun perkahwinan LAFame Bridal Mansion secara maya. Dalam era globalisasi kini, teknologi AR telah digunakan dalam bidang permainan, edukasi dan lain-lain lagi. Pengantian memang akan memilih gaun perkhawinan sebelum berkahwin. Pengantin biasanya menggunakan banyak masa untuk memilih dan memakai gaun. Tambahan pula, pandemic Covid-19 menyebabkan pengantin tidak boleh keluar dari rumah. Applikasi ini yang mempunyai fungsi 3D gaun model dan bilik pemasangan maya dapat membantu pengantin untuk tahu perincian gaun dan dapat tengok kesan gaun atas pengantin. Projek ini menggunakan perisian seperti Android Studio dan Blender untuk membangunkan applikasi AR.

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LIST OF ABBREVIATIONS

FYP	**-**	**Final Year Project**
FTMK	**-**	**Fakulti Teknologi Maklumat dan Komunikasi**
UTeM	**-**	**Universiti Teknikal Malaysia Melaka**

LIST OF ATTACHMENTS

CHAPTER 1: INTRODUCTION

1.1 Introduction

In this era of advance technology, Augmented Reality (AR) is booming and it relates to various of field for entertainment, learning, business and so on. AR is an enhanced version of the real physical world that is achieved using digital visual elements, sound, or other sensory stimuli delivered via technology. In 2020, there is a statistic showing 83.1 million consumers will use AR monthly in United States only. This shows people can easily and willing to get in touch with AR application such as the filters in Instagram. The picture that captured will combine the real image with overlaid elements.

"Try before you buy" is the important strategy before a buyer decides to buy a thing. As 74% out of 2005 consumers think that try out the goods before paying would remove a major drawback to online shopping (Klarna,2018). Retail industry like IKEA knows that and provides an application, IKEA place AR, to enable user preview and try the furniture virtually at home before buying it. In order to improve AR immersion of user, human body detection technology is merged into AR technology to let the user interact with virtual elements in the application with body movement. For example, since 2018, iOS 12 or later got the feature of Memoji which will mirror the user's facial expression and body movement in real-time by using the face detection and body detection technology. Tracking body movement can be done by capturing the specific points of user's body and joints.

Tracking shoulder's measurement technology is also used in AR fitting room to allow users pick out the clothing and try them all out virtually. The demand for

virtual fitting room increases during the Covid-19 pandemic as people prefer online shopping (Global report,2019). The proposed AR fitting wedding dress is aimed to study how AR tracking shoulder's measurement and superimpose the wedding dress based on the user's shoulder measurement. Wearing a wedding gown is a complicated process and it is impossible to try all the wedding dress in the physical store. With shoulder tracking technology, it will detect moving the joint part of shoulder and know a human is detected to do the following operation. The sensor node will send the data of user's shoulder measurement that be captured to let the virtual wedding dress fits on the correct position with correct size in real-time. Trying all the wedding dress is not dream for girls anymore.

1.2 Problem Statement

The first problem statement is the steps of wearing a wedding gown are complicated. Wearing a wedding gown usually need one professional staff to help the brides to try it on. If the bride wants to try many styles of wedding gown, that is a lot of work for the staff and bride as they are exhausted to wear and take off the gown. This is also cause to the next problem.

Next, the second problem statement is brides need a long time to choose perfect gowns that actually suit them. Although the wedding gown designer will give the advice and suggestions to the bride, it still uses lot of time for trying the wedding dresses. It may use less time, if the bride has her own choice before she goes to the physical wedding gown store to try it.

The last problem is the bride cannot actually see and feel all the design of the dresses. For the wedding exhibition, people can only see limited dresses or see the wedding gowns through the catalog only. The bride has to book another suitable time to go to the physical store to see all the dresses.

1.3 Objectives

This project embarks on the following objectives:

1. To study AR tracking shoulder's measurement for wedding dress fitting.

2. To develop an interactive AR application that help user to choose their wedding dress through mobile platform.

3. To evaluate the usability of AR technology in the field of the fashion of wedding dress.

1.4 Scope

This project is suitable for all the girls especially the brides. The wedding dresses in augmented reality form show on the user's body. This application will be developed in mobile applications because everyone uses mobile phones. Users can use the application whenever they want. Besides, this application is in English version that most people know the language.

1.5 Project Significant

Users have to download the application on their mobile phone to use it at any time. The application will detect the joint position of user's shoulder while the users need to pick the wedding dress to fit on their body. An Augmented Reality(AR) application will be developed to see how the wedding dress looks on a bride. Users can save the choosing time of wedding dress without going through too many complicated wearing times. It becomes a reference for brides to choose which style of wedding dress looks good on her before she goes to the physical store to try for it. The bride can try all the wedding dresses with AR application if she wants.

1.6 Conclusion

In conclusion, this chapter briefly introduces and explains about what and why this project is going to develop. The problems that are faced by the brides are stated and these are the problems that hoped to be solved in this project. In the next chapter, literature review and project methodology will be explained.

CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

In this chapter, the Augmented Reality in fitting the wedding dress and the existing system of fitting clothes will be discussed. Although Augmented Reality technology is not the latest technology, it is still trending as it integrates virtual objects to our real environment. Our life can become better with Augmented Reality technology as it can give us references before we buy a thing.

2.2 Domain

In this part, the concept of visualization, augmented reality definition and concept, types of augmented reality and augmented reality application will be discussed.

2.2.1 Visualization

There are 3 criteria that need to fulfill for visualization. Firstly, producing an image that contains the information for visualize. Next, visual based on data, visualization transform from invisible to visible. Lastly, it must be readable and recognizable to provide a learning way about the data.

2.2.2 Augmented Reality Concept

Augmented reality is using the existing real-world environment and puts virtual object on the top of it to give a better experience. Virtual reality creates its own cyber environment, but augmented reality adds to the existing world. Augmented reality can highlight specific features of the physical world to make people more understand about those features.

2.2.3 Types of Augmented Reality

Augmented reality is mainly categorized into 4 types: marker-based, marker-less AR, Superimposition Based AR, and projection-based AR.

2.2.3.1 Marker-based AR

Marker-based AR or Image Recognition AR always provide us more information of a specific objects. The device's camera is used to detect the maker and a 3D version of corresponding object will replace the marker on the screen. It also allows user to rotate the 3D imagery to view more detail.

Figure 2.1 Example of marker-based AR

(El Filali, Yassir & Salah-ddine, Krit. (2019). AUGMENTED REALITY TYPES AND POPULAR USE CASES. 8. 91-97.)