

FTMK VIRTUAL TOUR

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**BORANG PENGESAHAN STATUS
LAPORAN AKHIR PROJEK SARJANA MUDA (PSM)**

JUDUL: FTMK VIRTUAL TOUR

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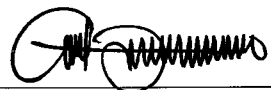
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FTMK VIRTUAL TOUR

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

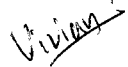
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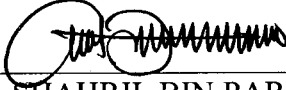
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DECLARATION

I hereby declare that this project report entitled
FTMK VIRTUAL TOUR

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

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DEDICATION

To my beloved parents for their care, concern, continuing support and encouragement, so that I can successfully complete this project.

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I would like to gratefully acknowledge the enthusiastic supervision of Mr. Shahril Bin Parumo during this Final Year Project I and II. His patients in giving advices, comment, and suggestions are really useful and it supported me through the whole period of FYP I and II. I give my appreciation to my FYP panels, Dr. Faaizah Shahbodin for given cooperation and time to evaluate my work. Mr. Mohd Adili bin Norasikin and Mr. Chua Wee Kok is thanked for given advices and suggestion in this project.

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Finally, I am forever indebted to my parent for their understanding, endless patience and encouragement when it was most required.

ABSTRACT

This project is about a 3D virtual tour on FTMK building. The project objective of this project is to develop a virtual tour for FTMK building that enable user to navigate inside the building by walkthrough. Secondly, the objective is to provide information of all lecturer rooms, lecturer's information, lab and other location in virtual tour. Lastly, the objective is to guide new visitor to get familiar with FTMK building. Currently, the existing virtual tours are composed by sequence of video images where users only can view the outlook of the object. This project is composed by 3D object which it allows users to navigate into inside of the building. This project also helps users to save time walking inside FTMK building to get familiar with FTMK building.

ABSTRACT

Projek ini ialah tentang 3D *virtual tour* bangunan FTMK. Objektif projek ini ialah membina *virtual tour* untuk bangunan FTMK supaya pengguna dapat *navigate* bangunan dengan menggunakan komputer. Selain itu, *virtual tour* ini juga memberi maklumat tentang nama tempat-tempat dan juga informasi pensyarah. Di samping itu, ia juga dapat membantu pelawat memahami bangunan FTMK. Pada masa kini, kebanyakan *virtual tour* yang sedia ada adalah dicipta dengan menggunakan suntingan video yang menyebabkan pengguna hanya dapat melihat luaran objek manakala projek ini adalah dicipta dengan menggunakan 3D objek supaya pengguna dapat melihat ke dalam objek tersebut. Projek ini juga membantu pengguna menjimatkan masa untuk berjalan dalam bangunan FTMK untuk memahami bangunan FTMK.

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LIST OF ABBREVIATIONS

VR	-	Virtual Reality
UTeM	-	Universiti Teknikal Malaysia Melaka
FIMK	-	Faculty of Information and Communication Technology
3D	-	3 Dimensional
2D	-	2 Dimensional
FKP	-	Faculty of Manufacturing Engineering
FKM	-	Faculty of Mechanical Engineering
HMD	-	Head-Mounted Display
BOOM	-	Binocular Omni-Orientation Monitor
VE	-	Virtual Environment
WoW	-	Window on World
QTVR	-	QuickTime Virtual Reality
SDLC	-	System Development Life Cycle
PC	-	Personal Computer
CPU	-	Central Processing Unit
RAM	-	Random-access memory
MKPI	-	Makmal Kejuruteraan Perisian 1

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CHAPTER I

INTRODUCTION

1.1 Project Background

The project that is to be developed is in the field of virtual reality (VR) which is a virtual reality tour on UTeM's Faculty of Information and Communication Technology (FTMK) building. Virtual reality if describe in terms of functionality is a simulation in which computer graphic is used to create a realistic-looking world. Moreover, the synthetic world is not static, but responds to the user's input such as gesture, verbal command and so on. This defines a key feature to virtual reality, which is real-time interactivity. Real time means the computer is able to detect a user's input and modify the virtual world instantly. People like to see things change on the screen in response to their commands and become captivated by the simulation.

Interactivity and its captivation power contributes to the feeling of immersion, of being part of the action on the screen, that the user experiences. But virtual reality pushes this even further by using all human sensorial channels. Indeed, users not only see and manipulate graphic objects on the screen, they also touch and feel them.

In summary, the definition of virtual reality is a high end user-computer interface that involves real-time simulation and interactions through multiple sensorial channels. These sensorial modalities are visual, auditory, tactile, smell, and taste.

1.2 Problem statement(s)

Currently, there are many virtual reality tour exist which are close to this project. For example, virtual show house, virtual hotels, virtual museum and so on which its purpose is to let user to have a walkthrough and get familiar and understand about the environment. However, the existing virtual tours usually are composed of a sequence of video images where it has weakness. The weakness is the virtual tours can only be pan left, pan right, pan up, pan down, zoom in and zoom out but it cannot walk forward and backward to look at the environment in front of users. In this way, the problem arise where users may not able to look inside and the overall picture of the environment. In this project, a virtual tour for FTMK building will be developed but not using sequence of video images to create virtual tour but model the building in a 3D form. Due to the building is in 3D form and unlike the video images which is in 2D form, this enable the virtual tour can be navigate in the movement of forward and backward to look inside the environment and to have better understand of the overall picture of FTMK building.

On the other hand, another problem arises for UTeM is that the overall structure of the FTMK building is complicated and is hard to understand by student and new visitors. Furthermore, FTMK building is huge building that shares faculty with two other faculties which are FKP and FKM. Many people always get lost in this building. Therefore, a FTMK virtual tour which allows users to navigate in front of computer without walking inside the huge building will be very useful for everyone.

1.3 Objective

The project objective of this project is to develop a virtual tour for FTMK building that enable user to navigate inside the building by walkthrough. Secondly, the objective is to provide information of all lecturer rooms, lecturer's information, lab and other location in virtual tour. Lastly, the objective is to guide new visitor to get familiar with FTMK building.

1.4 Scope

This virtual tour is created for new visitor that visit UTeM. The platform to be delivered is standalone system. The virtual tour covers only ground floor of FTMK building. However, it covers only the foyer and right wing of FTMK building which are 1 block of lecturer rooms that contain 14 rooms with only 1 room with detail and also 1 lab with detail. The limitation of this project is that it cannot be viewed on the web because it is a standalone simulation that is running EON .edz file. Besides that, users need to install Eon viewer on their personal computer in order to run the simulation. However, Eon viewer is free sources that can be easily downloaded from the Internet.

1.5 Project significance

The target users that will benefits from the project are new visitor that wish to visit Universiti Teknikal Malaysia Melaka (UTeM). The contributions when the project is successfully developed will be users save their time and energy to walk around FTMK building to search for the place they wanted to go but they just need to navigate the simulation in front of computer. Lastly, users not only get to know the location of different places of FTMK building but also the lecturer's particular in the simulation.

1.6 Conclusion

As a conclusion, I expected that this project will be useful to FTMK building since it benefits users to have more understanding about it and hope that this project will achieve the entire objective stated earlier. The next chapter to be developed discusses about literature review and project methodology.

CHAPTER II

LITERATURE REVIEW & PROJECT METHODOLOGY

2.1 Introduction

A virtual tour is a simulation of an existing location, usually composed of a sequence of video images. They also may use other multimedia elements such as sound effects, music, narration, and text. The phrase "virtual tour" is often used to describe a variety of video and photographic-based media. Panorama indicates an unbroken view, since a panorama can be either a series of photographs or panning video footage. However, the phrases panoramic tour and virtual tour have mostly been associated with virtual tours created using still cameras. Such virtual tours are made up of a number of shots taken from a single vantage point.

In this project, the virtual tour is on FTMK building but it is created in the form of 3D image.

2.2 Domain

There are many domains in the field of virtual reality. The virtual reality can be applied and used in various applications such as architecture, medicine, chemistry, flight simulator, museums, cultural heritage, financial data, weather simulation, entertainment, manufacturing, art, avatars, education and training, human motion, virtual communities and distributed VR, visualization, augmented reality and so on.

In this project, it is a virtual tour that is categorized to the domain of architecture because it is about building.

Furthermore, virtual reality system can be divided into three degrees of immersion. They are fully immersive, semi-immersive and also non-immersive. In this project, the domain is on non-immersive system. (Grigore C.Burdea and Philippe, 2003)

Fully immersive system is the ultimate version of VR systems. It lets user totally immerse in computer generated world. Fully immersive system usually uses head-mounted display (HMD) that supports a stereoscopic view of the scene accordingly to the user's position and orientation. It also uses head-coupled display such as a Binocular Omni-Orientation Monitor or BOOM. The systems may be enhanced by audio, haptic and sensory interfaces. Fully immersive system is the most demanding in terms of the computing power and level of technology. (Grigore C.Burdea and Philippe, 2003)

Semi-immersive system consist relatively high performance graphics computing system which can be coupled with either a large screen monitor, large screen projector system or multiple television projection systems. It is similar to the IMAX theatres as it uses a wide field of view which could increase the feeling of immersion or presence experienced by the user. It provides a greater sense of presence than non-immersive systems and also a greater appreciation of scale. (Grigore C.Burdea and Philippe, 2003)

Lastly, the non-immersive system use 3D virtual environment (VE) graphically displayed on a desktop computer monitor. It is sometimes being called Window on World (WoW) systems. It is the simplest type of VR applications. It uses conventional monitors to display the image of the world and no other sensory output is supported. (Grigore C.Burdea and Philippe, 2003)

2.3 Existing System

The current existing system of virtual tour share a similar characteristic, which is they are composed of sequence of video images that in 2D form where users are not able to navigate inside the building. For this part, there are five existing system to be discussed. They are 360° long room virtual tour, 360° virtual tour on bedroom with 360 panoramas, 360° virtual tour on home, AppleVRTours and Golf Course Tour.

2.3.1 360° long room virtual tour

This existing virtual tour is named 360° long room virtual tour. Long room is the place's name while 360° means it gives users the experience of standing in a space and looking in all directions 360 degrees. The image display method is by sequence of video images which is in 2-dimensional (2D). The software used to create this virtual tour is QuickTime VR and with custom Java Applet technology. The function of this virtual tour is to pan left, pan right, pan up, pan down, zoom in and zoom out. The limitation of this virtual tour is users could not navigate forward and backward into the environment of the building but only could rotate around the virtual tour to see the images that have been captured. This is because the virtual tour is composed by 2D video image which users only can see the image being captured during navigating. Figure 2.0 shows the image of this virtual tour.



Figure 2.0: 360° long room virtual tour