THE SHADOW AUGMENTED REALITY PUPPET

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THE SHADOW AUGMENTED REALITY PUPPET

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
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2011

DECLARATION

I hereby declare that this project report entitled

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

STUDENT : _____ Date: 11/7/2011

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(EN. MOHAMAD LUTFI DOLHALIT)

DEDICATION

I dedicate this thesis to my beloved parents. Without their support and patience, the completion of this work is impossible. Special thanks also to all individual that also contributed for the completion of this thesis.

ACKNOWLEDGEMENTS

First of all, I am very grateful to Allah S.W.T, with His blessing, finally I finished my Final Year Project. I am very happy, through this project, He provide me the strength, idea and a fine physical condition as me getting towards the finishing of my project.

I would like to take this opportunity to thank my PSM supervisor, Mr. Mohamad Lutfi Dolhalit. He surely has gone through to ensure me getting the right material and perfect solution for my project. He had given full attention for me to get the perfect score in this project. This project has tested me to the limit, but with guide by Mr. Mohamad Lutfi Dolhalit, I have survived the test and finally completed the project to submit it on time.

For the people around me including my parents and my fellow friends that had either formal or informally involved in my project, much appreciation I felt. As me getting the information on the material that should be inserted to the project, they surely had lent me a hand. Through this project I surely have been through many sweet sour of the work, but the people around me keep believing me and cheer me up to the very last time. Special thanks for them and it is fully appreciated.

ABSTRACT

Wayang Kulit is a traditional theater form that uses the principle of light and shadow. The shadows of the statues of the skin consist of various characters methologi and fantasy told by a puppeteer. Today, people are too hard to see the puppet show or for more information about this culture. This study was conducted to introduce the art of shadow puppets in the form of application or a system that is easy for users to feel how to play *wayang kulit.* This analysis is done on the application was puppet of the existing developed. In this project, augmented reality technology used to build this application. This product is believed has a huge potential in promoting the *wayang kulit* to the tourist. This document records the process of development for The shadow Augmented reality puppet from beginning until the testing phase. This project has been created to overcome the entire disadvantage from the recent product such as lack of information, attraction, and interaction.

ABSTRAK

Wayang Kulit adalah satu bentuk teater tradisional yang menggunakan prinsip cahaya dan bayang. Bayang-bayang daripada patung-patung kulit yang terdiri dari pelbagai watak methologi dan khayalan diceritakan oleh seorang Dalang. Pada masa kini, masyarakat terlalu sukar untuk melihat pertunjukkan wayang kulit mahupun untuk mendapatkan maklumat tentang budaya ini. Kajian ini dilakukan untuk memperkenalkan seni wayang kulit ini dalam bentuk aplikasi ataupun sistem yang mudah untuk pengguna merasai bagaimana bermain wayang kulit. Analisis ini dilakukan pada aplikasi wayang kulit yang sudah sedia ada dibangunkan oleh sesetengah organisasi. Dalam projek ini, teknologi Augemented Reality digunakan untuk membina applikasi wayang kulit ini . Aplikasi ini dipercayai mempunyai potensi yang tinggi untuk mempromosi budaya Wayang Kulit ini kepada pelancong dan pelawat. Semua dokumentasi untuk setiap fasa bermula dari fasa permulaan, pembinaan dan sehinggalah kepada fasa pengujian telah dicatatkan dalam laporan ini. Produk ini dibina adalah bertujuan untuk mengatasi segala masalah dalam sistem sedia ada.

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CHAPTER I

INTRODUCTION

1.1 Project Background

The task in this project is to create an application that can introduce one of the traditional cultures of Malaysia is called *Wayang kulit* using Augmented Reality (AR) technology. The concept of puppets that will be built using AR technology in generally, the object will not be seen. It can only be seen through a video camera as web cam, camcorders and much more. Use of this technology that can distinguish between objects with the puppet is another AR, hopefully they can attract more people to see the puppet arts. With the way the art of shadow play is to be maintained and kept from being swallowed time lapse. This project expected to be used by the government and the private sector as the Ministry of Information, Communication and Culture and Tourism ministry to introduce the art of shadow puppets to residents and tourists in the country or outside.

1.2 Problem statement

Nowadays, the art of shadow play is not much introduced to the public people. This will cause most people lack the exposure or knowledge about the *Wayang kulit*. Today, the art of *Wayang kulit* was introduced in the form of video or 2D. The problem is now people and tourists will be difficult to get a choice of materials or technology that can provide information and knowledge about this traditional art and culture.This will cause if not addressed the possibility of culture will be lost in time. In general, those applications are mostly offer the information about *wayang kulit* and consumers can experience for themselves how to play *Wayang kulit.*

1.3 Objective

Before beginning to start the project, aiming for what the result must achieved must be set first. This is to know at the end of the project, whether this is a successful one or not. The objectives of this project are:

- To develop an augmented reality *wayang kulit* application for those who has problems getting information or knowledge about this culture.

- To diversify and improve the use of technology in the *Wayang Kulit* show.

- To implement the edutainment approach in introducing the *Wayang Kulit* in the form of AR applications

1.4 Scope

Specifying the work, the scope put in the picture to know where the project will lead to. This to ensure the project is going as planned and it also states the control of the study. Here are the scopes for the project:

- Only the traditional culture *Wayang kulit* will be studied in this propose project.
- Will only show the two characters, and some musical instruments that are commonly used in a *Wayang kulit* using the augmented reality.
- The target user for this project is mainly for youngster, but it still available for all lever users and aged between 17 to 40 years old.
- The project is applied in Window system, because the window system has the majority users compare to others, such as Linux.

1.5 Project significance

The user is the main people who will gain the most benefit from the project. One of the contributions when this project successfully developed is the user can feel the real state of how to play *wayang kulit*. Thus, the new technology of augmented reality can improve or enhanced.

1.6 Conclusion

In conclusion, I wish that the functionalities of the application can be integrated as much as possible in this project. With include plenty of functionalities can make the project much more interesting.

CHAPTER II

LITERATURE REVIEW & PROJECT METHODOLOGY

2.1 Introduction

A literature review is a part of research which also known as process and documentation of the research literature concerning a particular issue and area of research. Any important information will be given a further attention in this review. The purpose is to offer an overview of significant literature published on the topic.

There are four stages has been done in order to do this literature review which are problem formulation, literature search, data evaluation and analysis and interpretation. Problem formulation is about examining the topic and field and its components of issue. Literature research is a process to find the materials relevant to the research. Data evaluation determining which literature makes a significant contribution to the particular topic. Analysis and interpretation is a discussion of the findings and conclusion of related literature.

According to Cooper (1988) "a literature review uses as its database reports of primary or original scholarship, and does not report new primary scholarship itself. The primary reports used in the literature may be verbal, but in the vast majority of cases reports are written documents. The types of scholarship may be empirical, theoretical, critical/analytic, or methodological in nature. Second a literature review seeks to summaries, describe, evaluate, clarify and/or integrate the content of primary reports".

Methodology is best described as the analysis of methods, theory concepts or idea, and rules for a research. It also includes comparative study from different types of approach and also example from the existing system today. Methodology used to describe the detail about the set of methods used in the research which known as processes and task. In order to complete the project, methodology is an important part in this research.

2.2 Domain

The domain of this project is based on the augmented reality in leisure activities. Through this application, user can gain the experience on play the *wayang kulit* during their leisure time. Besides of gaining playing experience, users can also learn the art of *wayang kulit*. With this application, the users will be able to experience for themselves how to play the *wayang kulit* but also get knowledge about the traditional culture.

2.3 Existing System

From the research, there are several types example of *wayang kulit* application such as from web-based of the *Wayang Authoring*: A Web-based Authoring Tool for Visual Storytelling for Children and the Puppetwall system.

i) *Wayang Authoring* : A Web-based Authoring Tool for Visual Storytelling for Children

Figure 2.1 is an example of a web application about the *wayang kulit* that have been developed for visual storytelling for children. The used can be visit from http://dimeb.informatik.uni-bremen.de/wahju/prototype/2.0/. According to Widjajanto, W.A *et al.* (2008), in *Wayang* Authoring children are able to compose a story by using digital puppets, save, and share it. The *wayang Authoring* enables

children to adopt many distinct characters and to act out moods, conflicts, and imaginative fiction in a safe environment.

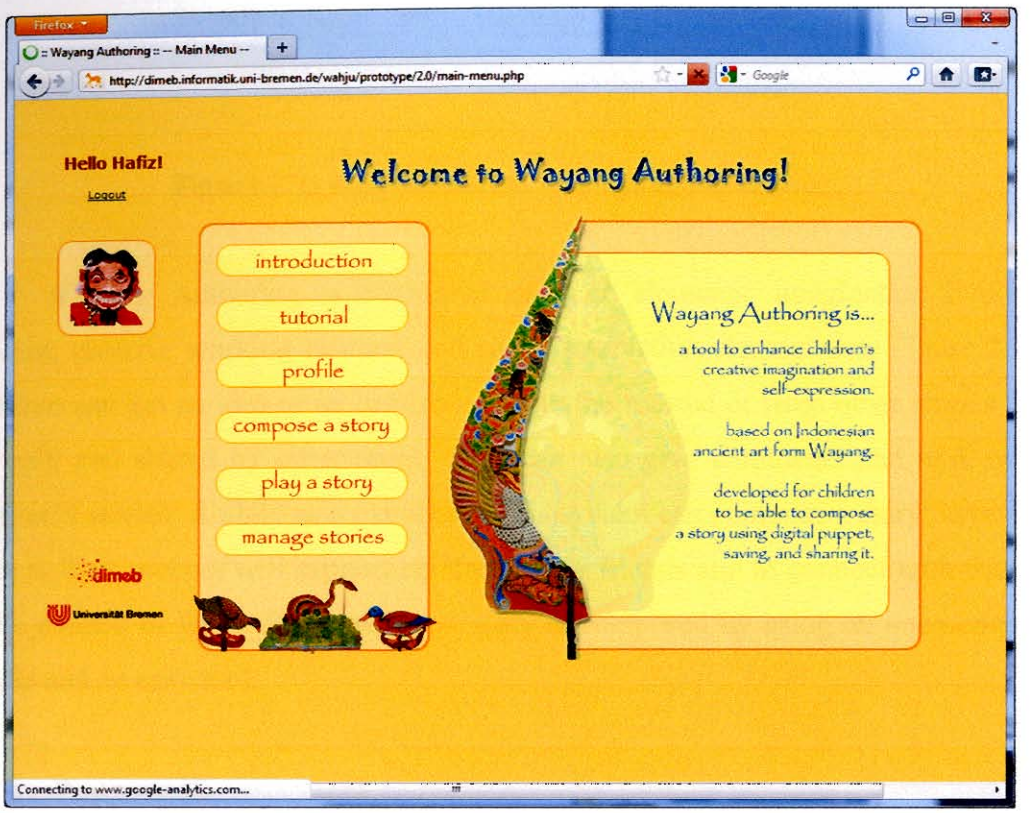

Figure 2.1: Screenshot of the *Wayang* Authoring's Prototype

The user can control and interact with the *wayang* by using the menu that has been provided. The interactive functions of *wayang* Authoring connect the world of gaming with traditional art of *wayang* and enhance imaginary and creativity power of the children and even more. *Wayang* Authoring tool treat the application as a collection of objects. Children choose some objects and define properties of these objects.

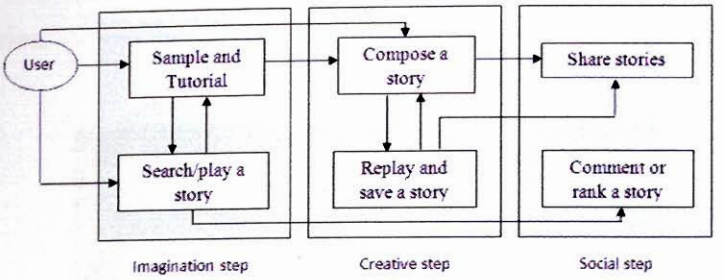

Figure 2.2: Basic elements of *Wayang* Authoring

Wayang Authoring is composed of three elements: imagination building element, creative working element and social interaction element (see Figure 2.2.). Children can get an idea or an inspiration from the tutorial or from other stories that are built and shared by other users. They can also give comments and rank other children's stories. A child as a member of this system can compose a story, save and share it. This process will support children to get friends and to connect with friends in the context of the social network. A story is composed by using an interactive, a simple and an easy tool.

ii) Puppetwall

According to Liikkanen, L.A *et al.* (2008), PuppetWall is a multi-user, multimodal installation for collective interaction based on the concept of traditional puppet theatre. When interacting with PuppetWall, users hold a wand in their hands that controls a puppet on a large touch screen in front of them. The touch screen is used to manipulate the playground, which consists of characters, props, and a background. The aim is to provide a platform for exploring emotion and multimodality with an interactive installation. Here we report on the design and details of the first prototype application.

The PuppetWall system includes several input modalities for explicit and implicit control and a large multi-touch screen to visualize and edit the visual animations and scenes. The main view of PuppetWall interface is called a playground and is comprised of characters, props, and the background (see Figure