

**AUGMENTED REALITY ART BOOK WITH INTERACTION TO  
PROMOTE MALAYSIA TRADITIONAL GAME**

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## BORANG PENGESAHAN STATUS TESIS\*

JUDUL : AUGMENTED REALITY ART BOOK WITH INTERACTION TO  
PROMOTE MALAYSIA TRADITIONAL GAME

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PROMOTE MALAYSIA TRADITIONAL GAME**

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

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY  
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2013

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SUPERVISOR : \_\_\_\_\_ Date: \_\_\_\_\_

( )

## **DEDICATION**

To my beloved family, lectures and friends.

## ACKNOWLEDGEMENT

First and foremost, I would like to thank Pn Sharul Badariah for giving me guidance and encouragement to complete this project. Besides this, I would like to thank the Faculty of Information and Communication Technology for giving me this chance to carry out this project. I would like to express my appreciation to the lecturers of Faculty of Information and Communication Technology. I couldn't complete this project without the knowledge that they delivered to me.

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## **ABSTRACT**

Malaysia is a country that rich with multiple cultures. Among the culture, there is an interesting category which known as traditional game. Traditional game refers to the game that starts playing in certain society since long time ago and keep inherit until now. In Malaysia, the example of traditional game is Gasing, Wau, Congkak and many more. However, traditional game obtains less focus in the effort of promoting Malaysia tourism since it is a very effective method to improve interactivity with tourist. Besides, local young generations in nowadays are lack in knowledge about traditional game due to the attraction of digital devices and mobile game. Therefore, the purpose of this project is to against this problem by develop an art book that embedded with Interactive Augmented Reality Technology that promotes traditional game in Malaysia. This project involves the production of two products. First product is an art book that painted with the drawing of traditional game in Malaysia. The second product is an Augmented Reality application on mobile that able to detect the drawing on the art book in order to display extra information about the drawing. The application is also expected to provide interaction to deliver more information and engaging the user. This thesis will cover the method to implement the interaction features in Augmented Reality and explain all the procedure that involve during product implementation. At the end of the thesis, the acceptance and effectiveness of the product will be evaluated.

## ABSTRAK

Malaysia merupakan Negara yang mempunyai pelbagai budaya. Antaranya terdapat salah satu jenis budaya yang amat menarik iaitu permainan tradisi. Permainan tradisi ialah permainan yang telah wujud dari zaman dahulu sehingga kini. Contoh bagi permainan tradisi di Malaysia adalah seperti Gasing, Wau, Congkak dan lain-lain. Walaubagaimanapun, permainan tradisi tidak dijadikan sebagai tumpuan dalam usaha mempromosikan bidang pelancongan Malaysia walaupun permainan tradisi merupakan satu aktiviti yang berkesan untuk menambah interaktiviti terhadap pelancong. Oleh itu, maklumat projek ini adalah untuk mengatasi masalah tersebut dengan menghasilkan buku seni bersama teknologi Augmented Reality yang berinteraktif. Produk bagi projek ini dibahagi kepada dua bahagian. Bahagian pertama merupakan buku seni yang mengandungi lukisan berkaitan dengan permainan tradisi di Malaysia. Manakala bahagian yang kedua merupakan applikasi Augmented Reality yang berupaya untuk mengesan lukisan di atas buku seni untuk memaparkan informasi tambahan tentang lukisan tersebut. Applikasi ini juga menyediakan fungsi berinteraksi untuk menyampaikan lebih banyak informasi dan menarik perhatian pengguna. Thesis ini mengandungi cara untuk menghasilkan fungsi interaktif dalam Augmented Reality dan membincang semua prosedur yang terlibat. Dalam akhir thesis, penerimaan and keberkesanan produk akan dinilai.



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## **CHAPTER 1**

### **INTRODUCTION**

This project is involving the combination of art book with augmented reality on mobile for the purpose of promoting Malaysia tourism. In addition, the virtual 3D model will prompt out on the display screen of mobile device once the user scans the picture on the art book with a specific application. This will make the interaction become more attractive and interesting. Besides that, user can try to interact with the 3D model. The application also will embed with video. Thus, the purpose of this thesis is to document the research, analysis and progress to produce the final product that is able to promote Malaysia culture effectively among young generation.

## 1.1 Project background

Art book basically refers to a work of art that conveys information and content in non-textual format. For example, art book might consist of illustration, painting, or photography as interaction media. Sometimes, the information that delivers by art book can be very abstract where reader needs to define the meaning based on their own perspective. On the other hand, art book would be more attractive to reader and it is simple and straight during deliver the content if compare with textual document, since “An image worth a thousand words”.

Besides, augmented reality is a new technology that is real time. With the aid of this technology, the physical real world environment is enhance with computer generated information in multi sensory input such as graphic, sound, video, or GPS data. Augmented reality can be embedded to various types of devices such as head-mounted, eyeglasses, contact lenses and mobile devices. Basically, the devices would be portable and allow user to navigate under a free movement condition because user need to follow those computer generated information as their guideline to complete the task, so the information must always be visible to user although they are currently completing the task.

Nowadays, augmented reality is commonly applied in various field. For example, architecture, art, education, and gaming are design for the purpose of increase interactivity and provide more details information. In archaeology, the archaeologist is able to formulate conclusions about site placement and configuration. For industrial design, augmented reality can help to experience the product’s design and operation before completion. Volkswagen applies this technology to comparing calculated and actual crash test imagery. In medical, the hidden information such as heartbeat rate and blood pressure will be displayed while the doctor provides a surgery.

The purpose of this thesis is to document the implementation of augmented reality into an art book that will provide it functionality in art aspect. This paper will also discuss the technique that will be use to complete this task such as the type of software to producing an augmented reality application. At the end of the project, persuasiveness of the product will be evaluated.

## **1.2 Problem Statement**

The intention of this project is to develop a media that can effectively promote Malaysia tourism. First, most of the media that use to promote tourism currently is in linear interaction such as video, poster, or booklet. This will cause less interest from audience and become less recognition impact. Young generation nowadays are addicted to a lot of digital device such as computer, and mobile phone. Some of them don't even know clearly about the culture of their own origin.

Second, most of the media nowadays are focusing on promoting food culture and tourism spot if we observe in the broacher that provided in tourism counter or hotel. Refer to this statement, traditional games in Malaysia seem to be forgotten even though it is an activity that could provide a good interactive with tourist either local or foreign. Therefore, the promoting on traditional games in Malaysia should be focus in order not to waste such precious culture that we hold.



Finally, for foreign tourism, we can try to break the traditional way of promotion by include more elements that suit for young generation and follow up their trend. This will improve the aspect of attraction and impact in promotion. To overcome this issue, the combination of media is needed to provide a full package of information that can let the audience understand the content by using one media only. The use of mobile devices as a platform to convey information also consider as an effective way since mobile devices had granted high acceptance from major population. Thus, the implementation of augmented reality in art book is a suggestion that could be done as a brand new type of media to promote Malaysia tourism.

### 1.3 Objective

The goals of this project are as below:

1. **To develop an interactive art book that enhanced with augmented reality.**

An art book will presented static image to viewer. In this project, it will integrate with augmented reality where the image will contain hidden information and retrieve the information once user applies the AR application on it.

- 2. To investigate the effectiveness in convey information by implementing augmented reality into art book.**

Art book is a linear medium in convey information, therefore the information that can be delivered is limited. But with the aid of augmented reality, the information can be conveyed in non linear method that allow user to perform interaction with the art book. Thus, this would make the distribution of information become more memorable and effective.

- 3. To discover the method of implementing interaction in augmented reality**

There are a lot of SDK (System Development Kit) that provide feature in develop augmented reality with interaction. But each of them contains their own advantage and weakness. Therefore, this thesis will analyse among the SDK and selected the most suitable one. This paper also will retrieve the procedure of development by using those SDK.

#### **1.4 Research Questions**

- What is the best image to be use as marker for augmented reality?**

Augmented reality can be classified into two major trends which are marker and marker less. The augmented reality that requires a marker need some sort of graphic as guidance to display the computer generated information.

But for marker less, it is depends on some abstract information as guidance such as shape of an object, and colours. This paper will research about the marker augmented reality that use image as a marker. The research will identify the elements that define an image as an effective and good marker.

- **Identify the method to use marker as event trigger.**

Other than act as guidance in augmented reality, marker also can become an event trigger such as button. This will discuss about how to do the interaction between markers so that the markers can hold their specific relationship. For example, one of the markers can alter the information that display by another marker without using the third party interface.

## **1.5 Project Scope**

### **1.5.1 Target audience**

The target audience for this project is young generation which range of ages between 15-25 years old.

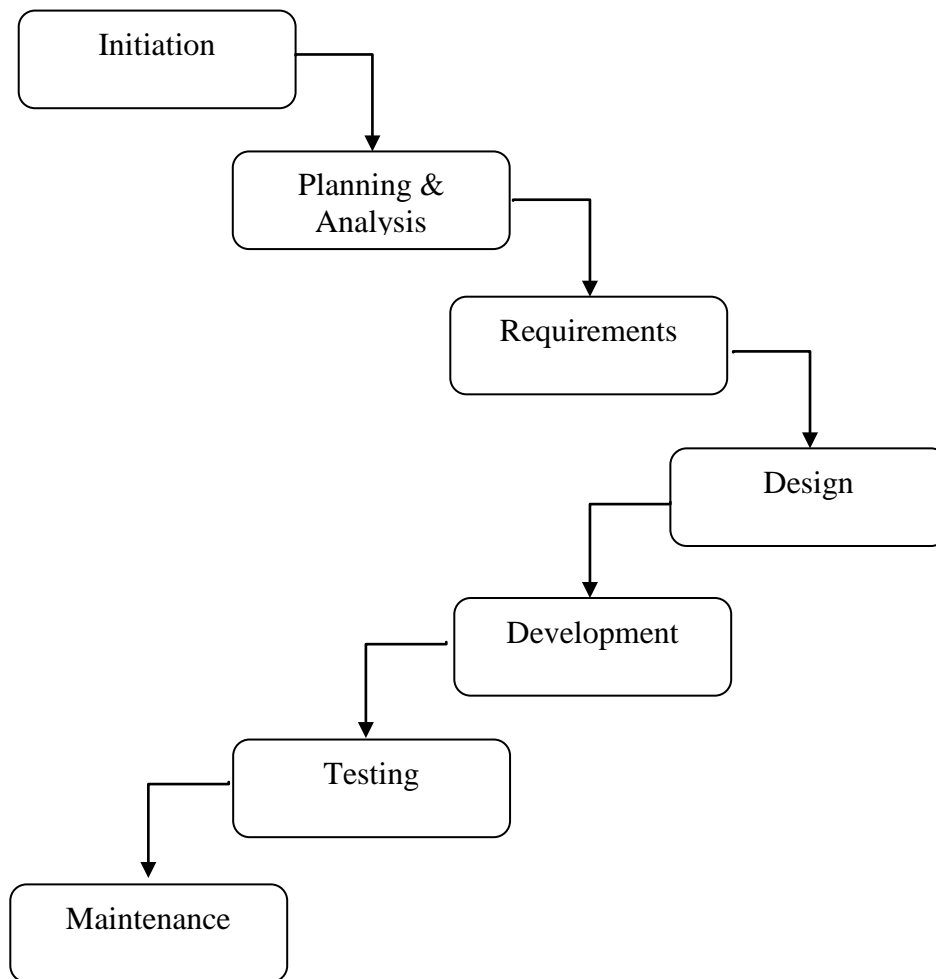
### **1.5.2 Themes**

This project will focus on promoting the traditional games in Malaysia as the main theme.

### **1.5.3 Platform**

This project will be developing in mobile Android platform.

## 1.6 Project Framework



**Figure 1.1 Project Framework**

Development process of this project will use the waterfall model that consists of seven phases. First is the initiation where to define the basic idea and identify the project objective. Planning and analysis will gather the data about the research topic and analysis the data. User requirement and equipments requirement will be identify during requirement phase. Design phase will deal with the art work and modeling design while development phase will start to implement the complete art work and apply augmented reality feature on them. Testing phase consist of test the product with target user and evaluate their review. Try to update the product base on the review in maintenance phase.

The details of the process will be discussed further in Chapter 3.

## 1.7 Project Significance

Tourism is an important field that will bring a great income to the economy of our country. The visit of tourist will increase the trading rate of local product and also benefit the local transportation company. Other than that, they can improve the business of residential service provider such as hotel, resort, and home stay. A lot of business chance would appear around the tourism hot spot due to high population of visitor and this will directly improve the average financial level of Malaysia citizen and decrease the poverty rate. On the other hand, tourism will raise the reputation of our country in international stage.

Therefore, the meaning of this project is to take part in effort to promote Malaysia tourism and make it become more effective and attractive. There are several types of media in promoting tourism such as advertisement on air, free booklet, and META fair. All those methods have their own tactic to attract specific type of audience. But there are rarely seen a method that target to young audience. Young generation is a very important group of population that require expose to local tourism especially to the traditional games in Malaysia because this is not only expand their knowledge and encourage healthy lifestyle but also let them understand the culture of their origin.

In addition, this project will give a brand new experience to audience in the way of understanding Malaysia culture. This will provoke their interest and curiosity to trying out the traditional game rather than just experience it virtually. The main purpose of promotion is to engage the audience to take their action in the way that will achieve our objective.

## 1.8 Summary

This thesis will research about the brand new method to promote Malaysia tourism in traditional game. First, the augmented reality technique will be implemented in art book as additional feature to convey information. The elements that need to consider on making the image on the art book as an effective marker will be studied through the research. Besides that, this project will cover the method to produce an interaction between markers where a marker will act as event trigger to alter the properties of another marker. The method and procedure will be discussed in the following chapters. The main purpose of this project is to promote Malaysia tourism especially for traditional game in more effective and attractive way. The target user of the product is the young generation where ages between 15-25 years old and the product will be developed on mobile Android platform. The main themes of the product will promote the traditional games in Malaysia as selling point. At the end of the project, persuasive of the product will be evaluated and recorded in this paper.

## **CHAPTER 2**

### **LITERATURE REVIEW**

This chapter will discuss about the basic concept of augmented reality in term of definition and also some issue related with augmented reality. Besides, this chapter will also discuss on the concept of tourism and also the methodology of promoting tourism. Some current existing AR SDK that provides interaction feature will be discusses and involve in the comparison process in this chapter.

## 2.1 Area of Study

### 2.1.1 What is AR

Augmented reality (AR) is a new technology that immerses the computer generated information to real world environment. According to A Survey of AR, by Ronald T. Azuma, 1997 AR system needs to contain three characteristic that are:

- Combine real and virtual
- Interactive in real time
- Registered in 3D

A simple AR system consists of three major components that are input, software and output. For the input component, we need the device and material such as camera, video capturing and tracker. Camera is the basic requirement for AR because real world environment is a necessary element to execute an AR system. So, the camera will capture the real world environment and convert them into digital form so that the system could analyze the data. With a set of analyzed data, the tracker in the system will recognize the object by defined marker or marker less attribute which also known as tracker ID.

The tracker will delivered the information to software and software will try to match the information such as graphic or text in database that corresponding to those specific tracker ID. Once the information was matched, the application will retrieve library object to merge the virtual object with real world environment and user can view the output through the scene generated by video compositor. Augmented reality is capable to display extra information from existing environment which also known as the hidden content. Therefore, this technique is suitable and being selected to be implementing.