VIRTUAL CONGKAK LEARNING TOOL USING AUGMENTED REALITY

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SUPERVISOR'S DECLARATION

I hereby declare that I have checked this project and in my opinion, this project is adequate in terms of scope and quality for the award of the degree of Bachelor of Computer Science (Software Engineering).

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STUDENT'S DECLARATION

I hereby declare that the work in this project is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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ABSTRAK

Kini, kita hidup dalam kehidupan di mana teknologi telah menjadi sebahagian daripada kehidupan kita. Teknologi telah berkembang dalam banyak cara di mana ia membantu kita setiap hari. Orang tidak dapat melihat diri mereka tanpa telefon pintar, komputer dan sebagainya. Kerana evolusi era teknologi, banyak budaya tradisional hilang dan dilupakan. Budaya tradisional penting di mana ia melambangkan diri kita sendiri. Sebagai contoh, permainan tradisional adalah simbol budaya seseorang. Di Malaysia, kita mempunyai permainan tradisional kita sendiri untuk mengenal pasti identiti setiap budaya yang kita ada seperti Melayu, Cina dan India. Dalam budaya Melayu, Congkak adalah salah satu permainan terkenal yang dimainkan di kalangan generasi. Tetapi disebabkan kecanggihan teknologi, orang lebih tertarik untuk bermain permainan dalam telefon pintar mereka daripada permainan tradisional terutama kepada generasi muda. Untuk mengatasi masalah ini, Virtual Congkak Learning Tool in Augmented Reality telah dibangunkan. Alat ini dicipta untuk pemain baru Congkak kerana generasi muda mungkin tidak biasa dengan peraturan Congkak sama sekali. Jadi alat ini akan membantu mereka. Dan juga, idea mewujudkan tutorial permainan ini dalam persekitaran realiti terimbuh adalah untuk mendedahkan dan menarik generasi muda ini untuk bermain permainan tradisional, terutamanya Congkak mengikuti teknologi canggih hari ini. Aplikasi ini mengikuti metodologi Rapid Application Development (RAD). Virtual Congkak dibina menggunakan platform Unity 3D dengan sokongan Vuforia untuk realiti terimbuh. Hasil daripada projek ini adalah memenuhi semua objektif dan fungsi-fungsi utama berfungsi dan memenuhi keperluan.

ABSTRACT

Nowadays, we live in a life where technology has become a part of our lives. Technology has evolved in many ways where it helps us every day. People cannot see themselves without smartphones, computer and etc. Because of the evolution of technology era, many traditional cultures got lost and being forgotten. Some of it were important where it symbolize ourselves. For an instance, traditional games are the symbol of one's culture. In Malaysia, we have our own traditional games to identify the identity of each cultures we have such as Malay, Chinese and Indians. From Malay's culture, Congkak is one of a famous game played among the generation. But due to the technological sophistication, people are more attracted to play mobile games instead of traditional games especially to the younger generation. To overcome this problem, Virtual Congkak Learning Tool in Augmented Reality has been developed. This tool was created for the beginners of Congkak because the young generation may be not familiar with the rules of Congkak at all. So this tool will be helpful for them. And also, the idea of creating this learning tool in an augmented reality environment is to expose and attract these young generations to play traditional games, especially Congkak following the advanced technologies today. This application follows Rapid Application Development (RAD) methodology. Virtual Congkak was built using Unity 3D platform with supports of Vuforia for augmented reality. The result of this project was it meets all the objectives and the main functions worked and met the requirements.

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LIST OF ABBREVIATIONS

RAD   Rapid Application Development

SDD   Software Design Document

SDLC   Software Development Life Cycle

SRS   Software Requirement Specification

UAT   User Acceptance Test

UML   Unified Model Language

VCLT   Virtual Congkak Learning Tool

WBS   Work Breakdown Structure

CHAPTER 1

INTRODUCTION

1.1 Introduction

Nowadays, augmented reality is rapidly being evolved in technology. Augmented reality is a technology that can superimpose image as a computer generated and provides the user a composite view of the surrounding. (Kipper, 2013) As one of the major hit game in 2016, Pokemon Go became really famous around the globe, the idea of augmented reality are coming to the surface. People are getting their interest into this field. Many game developers today are keen to develop games using this techniques because it is in fact will give so much fun to the player. But, up to these days, there are still a little amount of augmented reality games that available in the applications store.

Games are entertainment and it should thrive to deliver the entertainment. This project will develop a learning tool for Virtual Congkak which is an initiative to bring entertainment, education and Malay cultural heritage together. Virtual Congkak is a Malay traditional game that will be develop in augmented reality technology. Traditionally, to play Congkak, it will use a wooden board filled with marbles. The aim of this game is the players (consist of 2 players) have to collect more marbles than the opponent. But it is not just simply like that, there are rules of every games, and so do the Congkak. Thus, that is the aim of this project, to create a learning tool of Congkak for beginners especially on children.

SD Virtual Studio is the targeted client for this project. It is one of a company that focuses on creating applications based on virtual reality and augmented reality technologies headquartered in Malaysia. SD Virtual Studio was just founded in 2017.

Despite that, they have created several games that using augmented reality. This company's vision is to develop the best software applications aim to change the public ambivalence perception on technology and to create more exciting games and yet still educating us.

1.2   Problem Statement

The young generation are losing their interest towards traditional games. Traditional games such as tossing the stones, long elephant, kite flying and top spinning are getting forgotten. It must be probably because of there are so many available games in the applications store that is more exciting than these traditional games. The kids maybe think that traditional games are only for their elders. Because, for their generation, computer games and mobile games are the best. (Simplewoman, 2014) Probably, the last generation who still know and play traditional games is the 90's generation. Because the traditional games is not up to the par of many other games created with advanced technology today. In additional, there is no one that are willing to practically teach these young generation about our traditional games because even the elders nowadays are playing games in their smartphone. In a word, it is not wrong to say that today, nobody would like to play traditional games because everyone prefers to play games in their smartphone. However, some of the children who live in rural area still interested to play the traditional games. (Shuib, 2017)

In this project, a learning tool about filling the wooden board (Congkak) will be develop. This learning tool will be created for the beginners of the game because the young generation may be not familiar with the rules of Congkak at all. So this tool will be helpful for them. And also, the idea of creating this learning tool in an augmented reality environment is to expose and attract these young generations to play traditional games, especially Congkak following the advanced technologies today.

1.3   Objectives

The objectives of this project is:

1.   To study a game learning tool of Congkak.

2.   To develop Virtual Congkak learning tool using augmented reality.

3.   To evaluate the functionality of the system using User Acceptance Test
      (UAT)

1.4   Scope

Table 1.1 Scope of the project

Scope	Descriptions
Scope	Descriptions
User	This game tutorial will be very helpful for players from all range of age.
Technology	Augmented reality.
Tools	- Unity 2017.3.1f1 (64-bit) - Microsoft Word 2013 - Vuforia Developer 2017.3.1p2 3D Builder 16.0.2611.0 - Draw.io
Features	- To teach the player how to play congkak. - Allow the player to have the first impression on the game by showing them how the game will works - Allow the player to understand the rules of congkak so they can plan the strategic ways to win.

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