

Universiti Teknologi MARA

**JARAK VR: DEVELOPMENT OF
IMMERSIVE VR SIMULATION FOR
SAFETY VEHICLES' GAP TRAINING**

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ABSTRACT

The project is about the development of Immersive Virtual Reality Simulation for candidates at driving school to learn about safety vehicles' gap while driving. There are increase in number of deaths on road among Malaysian, high number of rear collision accidents on straight road and lack of interactive style for teaching method at driving school that become the motivation of this project. The objectives of this project are to identify the requirement, to design and to develop the development of Immersive Virtual Reality Simulation for Safety Vehicles' Gap Training. The scope for this project is focusing on candidates at driving school in Bukit Pasir, Muar, Johor on learning about keeping their vehicle's gap safe on straight road through Immersive Virtual Reality technique which they will be placed into virtual world of driving a car. The candidate will be taught on two situations which are high speed or low speed of driving based on a technique called "Two or Four Second Rule". The limitation for this project is the application only have been developed using 3D model, not a real-world environment view. The methodology chosen in this project is Rapid Application Development (RAD) because the application only focuses for a specific scope within short period of time. This project gives significant value to the potential driving candidates at driving school for them to learn about safety gap in a more interactive approach. Besides, driving school will experience the benefit of this project as it is offering interactive approach in teaching method. This gives the driving school competitive advantage as this method is not being used by other driving school. The results of this project show that the Immersive Virtual Reality gives better experience and user interactive to the participant in safety educational. The project will be future developed by using real-world environment such as a 360 Virtual Reality video and pedals to improve the user interaction for better experience.

Keywords: Immersive Virtual Reality, Driving Simulation, Rapid Application Development (RAD) Model, Safety Educational, 3D Environment.

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CHAPTER 1

INTRODUCTION

Chapter Overview

This chapter discuss the background and justification of the project, “Development of VR Simulation for Safety Vehicles’ Gap Training”. Therefore, this chapter delivers the project background, problem statement, objectives, scope, and significance of the project.

1.1 Project Background

Over the years, transportation has become the main medium for people to move from one place to another globally. Therefore, the number of vehicles on road has been significantly increase year by year. Malaysia is one the country that also affected by this phenomenon. According to statistic until December 31, 2012, the number of vehicles were 22.7 million over 28 million Malaysians at that moment (Azman, 2016). This phenomenon of increasing number of vehicles leads to the risk of traffic accidents to occur as Malaysian tend to have their own transport rather than using the public transport which will cause some issues, mainly traffic congestion and accidents (Haikal, Mohd Zakwan, Muhamad Zaihafiz & Mohd Hafiz, 2017).

However, according to the European Road Assessment Programme, the main factor that contributes to road accidents is human factor which is 90–95 % overall while road and its environment and vehicle both 28–35 % and 8–10 % respectively (Goniewicz, Pawłowski & Fiedor, 2015). This is relevant to the statement which most of the traffic accidents happened caused by people driving without safety precautions or ignoring traffic rules instead of road and vehicle conditions itself (Ruxyn, 2017). The rules that have been ignored are speeding