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| University of reading |
| Individual Project Report – Virtual Campus |
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**Virtual Tour of Whiteknights Campus for Android Virtual Reality**

School of Mathematical, Physical and Computational Sciences

Individual Project – CS3IP16

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# Abstract

This report discusses in detail about the creation of my Final Year Individual Project, Virtual Campus. Virtual Campus is a Virtual Reality version of University of Reading’s WhiteKnights Campus. The Virtual Tour of Whiteknights Campus is an Android application, which allows users to explore a part of Whiteknights campus using a teleportation based movement. The campus has been built using unity and runs on Nougat Android phones or higher. The android application has been built using Unity and the models of the building was created using SketchUp and users are free to explore a part of WhiteKnights campus. The aim of the Virtual Tour of WhiteKnights Campus is to allow users freely explore campus in a virtual reality setting, this also helps users who wish to come to University of Reading but may be unable to attend an open day, so they can download this app and then explore campus in Virtual Reality.

# Acknowledgements

I would like to personally thank Timothy Threadgold for his support and suggestions for my project. Without his help, half of the implementations in this project wouldn’t be possible without him. His assistance has been supportive and assisted lead the project into the right way.

# Glossary of Terms & Abbreviations

API – Application Programming Interface

FOV – Field of View

GPU – Graphics Processing Unit

GUI – Graphical User Interface

# Introduction

Virtual Reality has been on the arise of popularity ever since 2010s when Palmer Luckey designed the first prototype of the virtual reality headset called the Oculus Rift. Two years later in 2015, video game developer and digital distribution company, Valve Corporation and consumer electronics company HTC, announced their virtual reality headset named HTC Vive. It featured controllers that allowed the user to interreact with the virtual environment. [1]

Today Virtual Reality is possible and nearly accessible to anyone who possesses the latest model of a smartphone such as the iPhone or an Android phone (Like the Pixel or Samsung Galaxy) or own a console such as having a PS4. Virtual Reality headsets are becoming cheaper in general as well, so meaning that virtual reality is becoming more accessible to the public and thus increasing the popularity.

My project is about creating a virtual reality version of WhiteKnights Campus, the application will be created primarily in Unity and all the buildings featured inside the WhiteKnights campus was made using SketchUp, the virtual campus application will be made for Android Devices running nougat or higher and have daydream/cardboard installed on it (The virtual reality software). The aims of the virtual reality campus are Provide users with a comfortable experience of Virtual Reality (Allowing to explore campus at their own pace), learn about the history of each building in WhiteKnights Campus. The App itself should be able to be installed on all phones running Android Nougat or higher and should provide smooth framerates and response no matter the hardware.

This report will discuss in detail about the creation of the application, the research made to prefect the Application, the approaches and implementations to create the project. The testing of the project along with its results. Also in this report will discuss the personal reflection and outcomes of the project.

# Problem Articulation

# Technical Specification

# Research

# Solution Approach

# Design

# Implementation

# Testing

# Discussion

# Social, Legal, Health & Safety & Ethical Issues

# Conclusion and Future Improvements

# Reflection

# References

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| [1] | “Virtual reality,” 2017. [Online]. Available: https://en.wikipedia.org/wiki/Virtual\_reality#2015%E2%80%93present. [Accessed 24 March 2018]. |

# Appendices

## Project Initiation Document

## Project Log Book

## Script

## Poster

## Map of WhiteKnights Campus



Figure 1 Map of WhiteKnights Campus - link: <https://www.reading.ac.uk/web/files/whiteknights-campus-map-and-keys-2016.pdf>

## Github

<https://github.com/JamesTang2905/Individual-Project-2017-18>