LIT INFORMATION TECHNOLOGY

# An Experimental Demonstration of an Android Mobile Application that utilises Augmented Reality and Text to Speech to Educate the user about the Moon.

## Introduction

Have you have ever stood out on a clear night's sky and watch our celestial neighbour, the Moon, as it slowly moves? I have done this several times in my life and will continue to do so at every chance that I can. Our Moon is a wonderful and scary place to find yourself alone. My fascination on the Moon has called for the development of an Android application that educates more people about the Moon in a fun and entertaining way.

There is a small chance that we will ever get the chance to go to the Moon but that is not stopping us from bringing a version of it to us. With new technologies available like the growth in popularity of Augment reality it is now possible to merge the physical and virtual world together.

## Aims & Objectives.

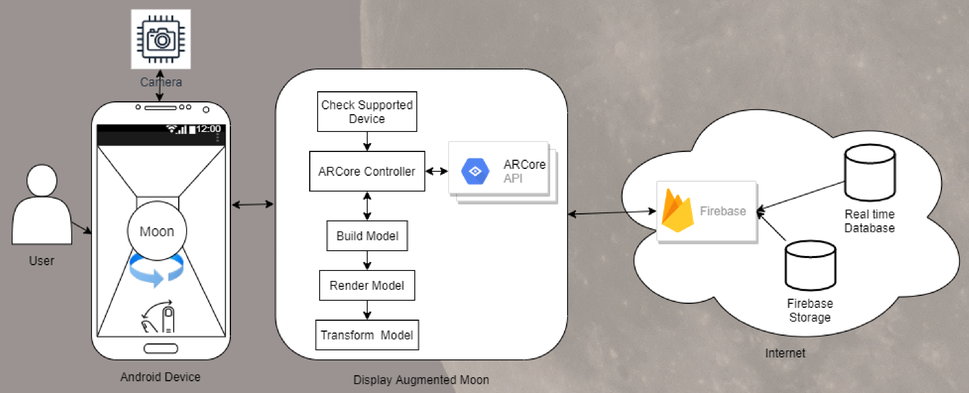
The aim of my project is to be able to create an immersive Augmented Reality application that teaches the user about the Moon and its surface. To be able to accomplish this I need to have a further analysis of how to develop a mobile application fixating on the educational aspect.

1. How can Augmented Reality be used in an effective educational environment?
2. How can Augmented Reality and Mobile applications reduce the inaccessibility of environments such as the Moon?
3. How can you explore the lunar surface utilizing Immersive technologies?
4. How much can someone learn about the moon using an Android device.

## Methodology

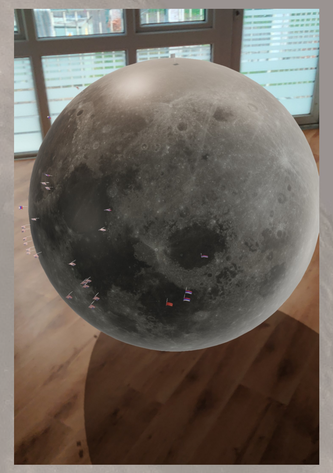
Designing the Android application required me to used everything that I have learned as a student of Software Development in Limerick Institute of technology. The project was built using an agile approach to the software development lifecycle. I had to investigate all the technologies that I will be using and known their limits. As the project was going to be an Android application, I needed to learn Android's UI and UX best practices so that I could create an effective system.

The implementation of the design required me to develop an Android application on using Android Studio on my Windows computer. I needed to learn how to use and create 3d models using Blender, so I took some LinkedIn course to get the knowledge needed. From here I added the realistic models to my Firebase cloud storage for me to import them into ARCore and Sceneform. I collected some factual data like images, videos, and facts about the Moon so that I may display them to the user in video and image frames. Using the TTS library to convert text to audible voice allowed me to increase the accessibility of my application.




## Findings

It can be said that it is possible to educate users about the Moon using an Android application that has Augmented Reality and Text to Speech within a given timeframe. Using immersive technology like Augment Reality allows virtual objects to be brought to life using only your smartphone and its camera. This brings what is not accessibility such as the Moon right in front of us so that we may have a closer understanding. By utilising technologies like Android Studio, Blender and ARCore a compressive application can be made complete free.



## Conclusions

Being able to develop such a project like this was not only exciting but it allowed me to combine my own fascination with the Moon and learn so much more then I had previously known. If I were able to continue with this project further, there is a lot more that could be implemented like; having the user walk through a portal into the surface of the Moon, adding more unique 3D models, having the users be able to filter the models down as well as created an iOS version so more people can use this application. Having now built this project I can concluded that it is possible to create an Android application that educates users about the Moon within a short period of time.

## Technologies Used

Windows, Firebase, Android Studio, ARCore, YouTube, Java, blender, LinkedIn Learning

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