Google ARCore

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Chapter 1

Introduction

1.1 Presentation of the group

We are two 3rd year students - *Guillaume HUBERT* and *Rudy BARBERIS* - from the ESME Sudria in France, and we have chosen to do our Erasmus IT project about the Google ARCore.

Even if we have never done such a project before, we wanted to explore some new aspects of programming. This Google ARCore project allows us indeed to work and discover what is the Augmented Reality precisely and how it works. This is also an opportunity to discover the Unreal Development Kit which is a complete interactive tool to develop games and applications, such as Fortnite.

1.2 Presentation of the project

To realize our project, we have to use ARCore, a platform for creating augmented reality experiences by using different APIs. Those can permit your phone to capture the environment and interact with it by understanding it. Most of the APIs are available on Android and iOS to share AR experience.

ARCore uses three methods to integrate virtual content with the real world thank to your smartphone camera:

- **Motion tracking :** permits to your phone to show you your own position (GPS)

- **Environmental understanding :** like a bubble level, it permits to know which size and location of every kind of surfaces : horizontal or vertical, etc...

- **Light estimation :** allows the phone lighting conditions of the phone's environment.

Figure 1.1: example of use

Chapter 2

Google ARCore

2.1 What is the ARCore

Figure 2.1: image arcore

The ARCore is an application that generates augmented reality with your phone or tablet using your camera in real time and objects or animations.

2.2 How it works

ARCore works thank to those different steps written above. ARCore's motion tracking technology uses the phone's camera to identify features, some interesting points and tracks how it moves over time. With a combination of the movement of these points and readings from the phone's inertial sensors. ARCore determines both the position and orientation of the phone as it moves through space.

Furthermore, ARCore can identify flat surface and lighting conditions in order to build a self-understanding of the world around it. Then, the user can place objects, annotations or information with a well-integration with the real world. Whatever you placed, if you move your camera or if you quit the room, everything you place on ARCore will stay at the same place, depending on the light and on the inclination of your phone.

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