E-COMMERCE WITH AR

CIP PROJECT REPORT

Submitted by

AKIL VISHNU M 2018115010

BALASUBRAMANIAM M 2018115018

VENKAT KARTHICK P 2018115125

submitted to the Faculty of

INFORMATION AND COMMUNICATION ENGINEERING

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

INFORMATION TECHNOLOGY

DEPARTMENT OF INFORMATION SCIENCE AND TECHNOLOGY

COLLEGE OF ENGINEERING, GUINDY

ANNA UNIVERSITY

CHENNAI 600 025

May 2021

ABSTRACT

An Online Shopping Mobile Application incorporated with Augmented Reality which is aimed to enhance the traditional user experience of online shopping leveraging new technology that provides more lively experience of the products they search for. Showcasing of products is enhanced using Augmented Reality which provides a virtual experience of the products. Products sold online are made to appear in 3D format which helps user to have a better view of the product in all dimensions as if they were to be purchased in a physical store/shop. Products can also be viewed, bound to the surrounding environment or attached to any body, with the use of the cameras in the smartphones.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

The project aims to enhance the traditional 2D user experience with AR using 3D objects. It is aimed to be developed as an android application. 3D objects are classified as wearable and non-wearable products which are displayed to the user in their ambience.

1.1 TERMINOLOGIES AND PLATFORMS

1.1.1 Augmented Reality

It is an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information. Any object in the real world can be enhanced to make it appear (artificially)in the space or bound to any object. The enhancement can be constructive (addition to the environment) or destructive (masking the environment).

While the physical world is three-dimensional, most data is displayed on two-dimensional pages, images and screens. This gap is closed by - Augmented reality, a set of technologies that superimposes digital data and images on physical objects and environments.

This concept is taken into account and thought of providing a new experience in online shopping replacing the traditional experience, where the products are displayed in 2-D images.

1.1.2 Unity-3D

It is a cross-platform game engine which is used to develop Android and iOS mobile games. The engine has since been gradually extended to support a variety of desktop, mobile, console and virtual reality platforms.

It provides in-built Augmented Reality packages. Those packages are customized and used in this project. Some of the packages included in the projects are ARFoundation , ARKitFaceTracking , ARCore XRplugin, ARKit XRplugin and so on.

1.1.3 Flutter

Flutter is Google's SDK for crafting beautiful, fast user experiences for mobile, web, and desktop from a single codebase. Flutter works with existing code, is used by developers and organizations around the world, and is free and open source.

Flutter's layered architecture gives you control over every pixel on the screen and its powerful compositing capabilities let you overlay and animate graphics, video, text, and controls without limitation. Flutter includes a full set of widgets that deliver pixel-perfect experiences on both iOS and Android.

1.2 SOFTWARE STACK

The listed below are the softwares used in the project.

1.2.1 Blender

Blender is the free and open source 3D creation suite. It supports the entirety of the 3D pipeline—modeling, rigging, animation, simulation, rendering, compositing and motion tracking, video editing and 2D animation pipeline.

1.2.2 Figma

Figma is a web-based graphics editing and user interface design app which is used to do all kinds of graphic design work from wireframing websites, designing mobile app interfaces, prototyping designs, crafting social media posts, and so on. It is different from other graphics editing tools mainly because, it works directly on the browser.It is used to access the projects and start designing from any computer or platform without having to buy multiple licenses or install software.

1.2.3 Dart

Dart is a client-optimized language for fast apps on any platform. It is an open-source general-purpose programming language. It is originally developed by Google and later approved as a standard by ECMA. Dart is a new programming language meant for the server as well as the browser. Introduced by Google, the Dart SDK ships with its compiler – the Dart VM. The SDK also includes a utility -dart2js, a transpiler that generates JavaScript equivalent of a Dart Script.

1.2.4 Firebase

Firebase is Google's mobile platform that helps in quickly developing high-quality apps and grow a business.

1.2.5 Unity

Unity is a game engine which is used not only for game development , but also for extended reality development.

1.2.5.1 ARFoundation

AR Foundation is a cross-platform framework that allows you to build augmented reality experiences once, then build for either Android or iOS devices. AR Foundation allows to work with augmented reality platforms in a multi-platform way within Unity. This package presents an interface for Unity developers to use, but doesn't implement any AR features itself. AR Foundation on a target device, you also need separate packages for the target platforms officially supported by Unity:

- ARCore XR Plugin on Android
- ARKit XR Plugin on iOS
- Magic Leap XR Plugin on Magic Leap
- Windows XR Plugin on HoloLens

1.2.5.2 ARSubsystems

A subsystem is a platform-agnostic interface for surfacing different types of functionality and data. The AR-related subsystems are defined in this package and use the namespace UnityEngine.XR.ARSubsystems. This package only provides the interface for various subsystems. Implementations for these subsystems (called ”providers”) can typically be found in another package or plugin. Session, Raycasting, Camera, Plane Detection, Depth, Image Tracking, Face Tracking,

1.2.5.3 ARKit FaceTracking

ARKit FaceTracking is one of the functionality supported by ARFoundation that enables the camera to detect and track human faces in real-time. To enable Unity face detection on a specific platform, AR Foundation provides ARCore and ARkit packages. Each overlays textures and 3D models on a detected face using a face mesh. This mesh may include face landmarks, vertices, UV coordinates, facial regions and other data by which algorithms recognize a face in a video stream. ARKit face tracking package for Unity recognizes the position, topology, and facial expressions to overlay AR assets and animate a user face in real-time on iOS devices. It requires a front depth camera.

1.2.5.4 ARCore XRPlugin

ARCore is a platform for building augmented reality apps on Android. This SDK provides native APIs for all of the essential AR features like motion tracking, environmental understanding, and light estimation.