Project Release 0.1 Version

Wearable Guiding Aid Device for the Blind People

Code Document

by

Hanming Jing 1063855

Mao Yihan 1063956

Yihuai Zhang 1064213

Yingxu Wang 1064070

March 28, 2021

Department of Computer Science

Wenzhou-Kean University

Abstract

This project is based on the proposal proposed by *Yudong Wang*. In this document, the first version of the released code is presented. Based on the previous software requirements specification and software design documents, we made some modifications and changes to the software in general with the goal of achieving the same results. In this document, the first version of the code is introduced.

Acknowledgement

We'd like to thank *Yudong Wang* for his proposal. Secondly, *Jianghui Xu* and *Hanming Jing*'s software requirement specification and *Xuan Ma* and *Zeyu Guo*'s software design document specify requirements and implementations for the entire project system. This project is based on their efforts to take initial shape.

Introduction

In this 0.1 version of the code documentation, we initially implemented the object recognition function required by the project on the phone, by using the camera on the phone. In the following, we will list the detailed code, as well as some comments to explain what the relevant code does.

Construction

With the EasyAR API, we give each of the objects several settings, (Figure 1). The Audio, the tags' etd file that played when the tags was detected and also the arrow model that could be shown on the screen.

Figure 2 shows the basic detection role that we made.

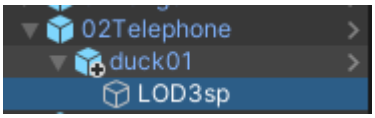

Figure 1, object settings

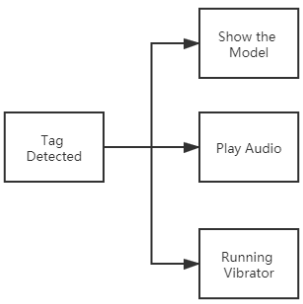

Figure 2, UML of the detection system

Packages & Code

Google Drive (Recommended):

https://drive.google.com/file/d/1HrbAyeRa2aggESz1GPTTqhfMelCfqZlh/view?usp=sharing

Github:

https://github.com/Grav1tyCan0py/Capstone

This is a simple Andriod application which was built on Unity Version 2019.4.13f1. Which can be installed from Unity Hub automatically. We got the EasyAR API plugin in our application, for the EasyAR version it is 4.0 for personal. The EasyAR needs keys to run, which can be find on EasyAR's website (4.0 version) .

https://www.easyar.cn/

Or our key is still useable.

KUHDFC1S2wg1NA2koOfWDiCzIdq9Bk+CkYrrbxlz9T8tY/MiGW7kb1YiqXRbMKd5XDelDR1xvi4DbbJhTm3xPhhl4gYJedkpTjqhYU5s+S4JbuMoHyKqFhci8jgCZPwoJWTjb1ZbzWFOdvE/BWH+OR8iqhZOY/8gAXX+JBh5shBAIuAhDXT2Ih5t429WW7I6BW70IhtzsmFObfEuTl28bwFv9DgAZeNvVluyPglu4yhCSf0sC2XEPw1j+yQCZ7JhTnP1Ix9lvg4Ab+UpPmXzIgtu+TkFb/5vQCLjKAJz9WM+ZfMiHmT5IwsivG8fZf4+CS7fLwZl8zk4cvEuB2n+Kk4ssj4JbuMoQlPlPwph8yg4cvEuB2n+Kk4ssj4JbuMoQkPRCThy8S4Haf4qTl28bwl44CQeZcQkAWXDOQ1t4G9WbuUhACyyJB9M/y4NbLJ3CmH8Pgl9vDZOYuUjCGz1BAhzsnc3IvMiAS7nOAFh8T0cLvEjCHL/JAgizWFOdvE/BWH+OR8iqhZOY/8gAXX+JBh5shBAIuAhDXT2Ih5t429WW7IsAmTiIgVkshBAIv0iCHX8KB8iqhZOc/UjH2W+BAFh9yg4cvEuB2n+Kk4ssj4JbuMoQkP8IhlkwigPb/cjBXT5IgIivG8fZf4+CS7CKA9v4ikFbvdvQCLjKAJz9WMjYvooD3TEPw1j+yQCZ7JhTnP1Ix9lvh4ZcvYsD2XEPw1j+yQCZ7JhTnP1Ix9lvh4cYeI+CVPgLBhp8SEhYeBvQCLjKAJz9WMhb+QkA27EPw1j+yQCZ7JhTnP

1Ix9lvgkJbuMoP3DxOQVh/AANcLJhTnP1Ix9lvg4tRMQ/DWP7JAJnshBAIvU1HGniKDhp/Sg/dPEgHCKqIxls/GFOae
MBA2PxIU469iwAc/UwQHuyLxlu9CEJSfQ+TjrLbw9v/WMbdf0sDXDgYwVv428xLLI7DXL5LAJ0429WW7IuA239O
AJp5DROXbxvHGzxOQpv4iAfIqoWTmn/Pk5dvG8Bb/Q4AGXjb1Zbsj4JbuMoQkn9LAtlxD8NY/skAmeyYU5z9SMfZb
4OAG/lKT5l8yILbvk5BW/+b0Ai4ygCc/VjPmXzIh5k+SMLIrxvH2X+Pgku3y8GZfM5OHLxLgdp/ipOLLI+CW7jKEJT5
T8KYfMoOHLxLgdp/ipOLLI+CW7jKEJT4Cwec/UeHGHkJA1s3SwcIrxvH2X+Pgku3SIYaf8jOHLxLgdp/ipOLLI+CW7
jKEJE9SMfZcM9DXT5LABN8T1OLLI+CW7jKEJD0Qk4cvEuB2n+Kk5dvG8JeOAkHmXEJAFlwzkNbeBvVm7lIQAss
iQfTP8uDWyydwph/D4Jfc0wWQNPQvcxD4CgFX/tN578Tu1gh5AODBvFp7/5kfp9e/AM9UxuKIFKZsO7CYkANefdI/q
R3alp2WXjQvQMHsUnEwGLef6Y7J7lgZiek3AO3Sj6sQQ88nXb5F9L+ALSvDFMhy8ds9dtxZzyS06D9z/kKubTYA4U
Mt0P2Z6O9IG7OHDEx1KPMC/KS4GrY1FgVxQwmFo6nrfgnQKza8D+7NQMhs4iCDqNhwrxN07VKAacSG8djKqQT
GYfxaR8eA1zq9/kqs3ry4T2HEidj9u9vdGesqMqh6Lxg5MIL7HpbWp1QcwulEZF8c1JovDvpYAlc0nm8Oarxh5AifHqIzt
jbACQTQ==

The EasyAR have function to transmit the jpg file to etd file for the detection system to use. It can be found in EasyAR -> image target. (Photo 2)

For the whole version (photo 1) the launcher is in the path

“Assets/Samples/Scenes/AllSamplesLauncher.unity”

, for the tag recognition and detection part, the path is

“Assets/Samples/Scenes/ObjectSensing/ImageTracking_Targets.unity”

The testing tag is on the Github with the same link. Also there are several songs for testing the audio function.

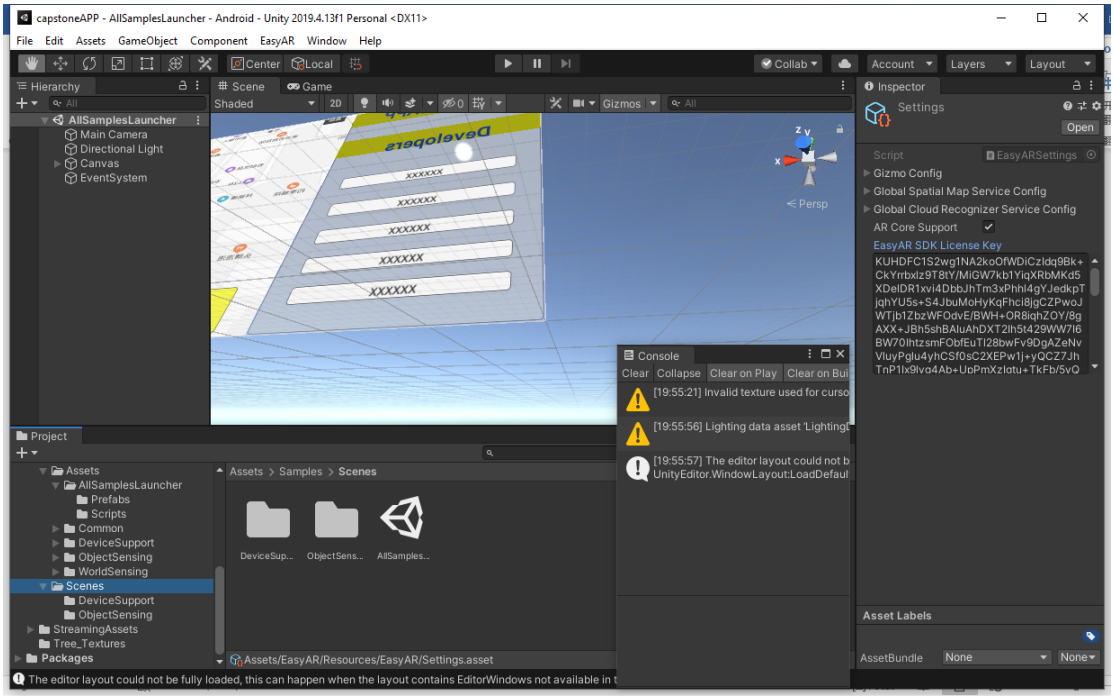

Photo 1, the UI of Unity

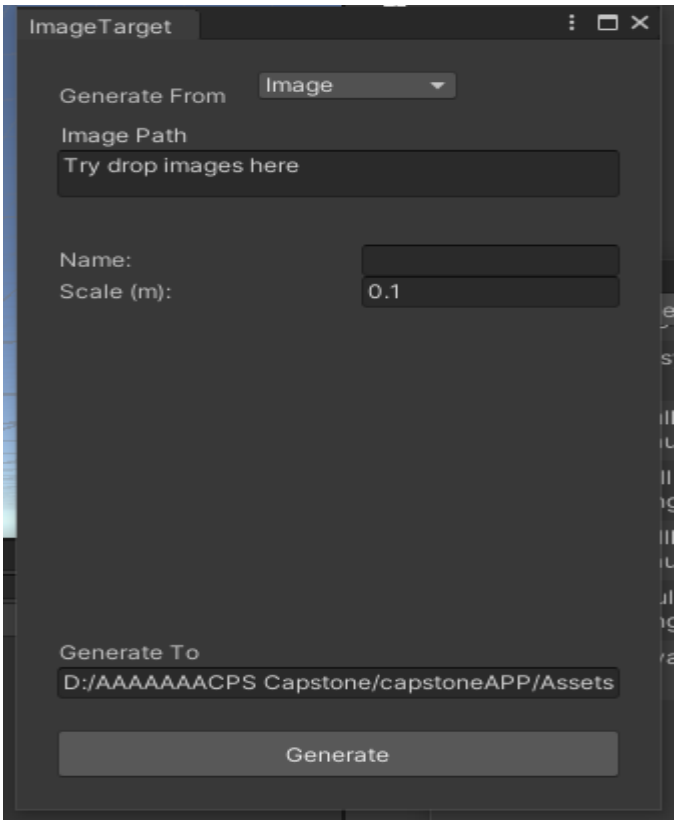

Photo 2, image target

For the vibrator concept, we use C# to get Unity's vibrator interface, which we will do further and connect to the developing board with Bluetooth or Wifi, and connect to the gloves.

Here is the vibrator code we have till now:

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class Viborator : MonoBehaviour
{
    // Start is called before the first frame update
    void Start()
    {

    }

    // Update is called once per frame
    void Update()
    {
        Handheld.Vibrate();
    }
}
```

It will be controlled by further java jar plugins.

For the packages, the “02Telephone” object is the most complete one in these objects. It is used for us to test vibrators. All the setting can be change directly through UI of the Unity (Photo 3) .

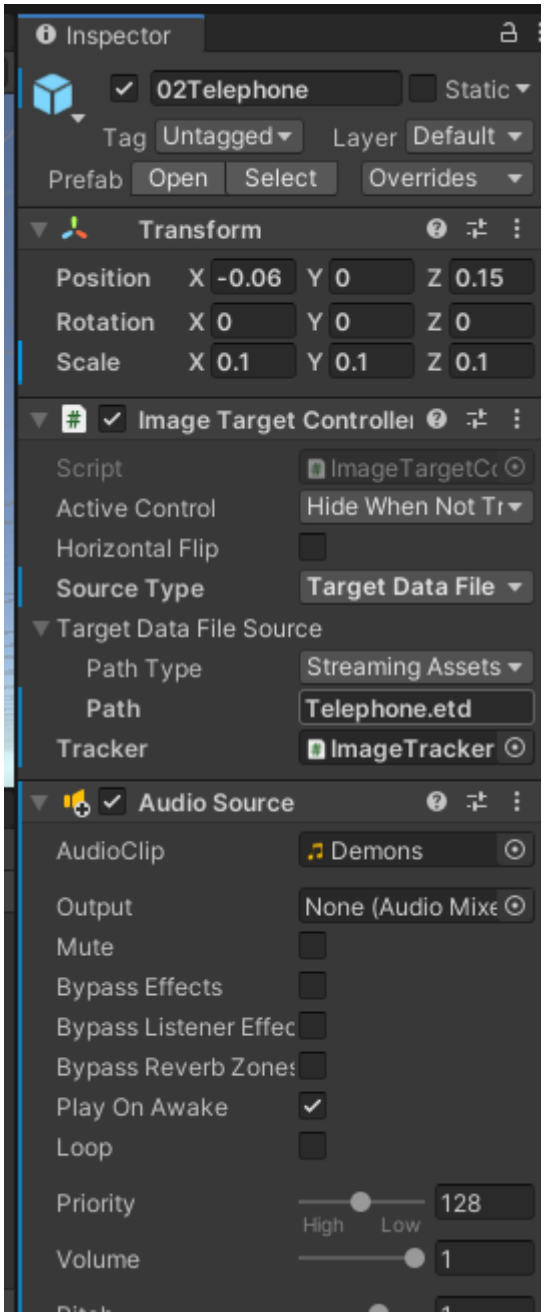

Photo 3, setting of UI.