

Project Deliverable F: Prototype I GNG1103 – Engineering Design

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Abstract

The following deliverable outlines the testing procedure in prototype I which is due for November 4th. Prototype I was a comprehensive prototype. The objective of this implementation was to build out the core functionality of the prototype (mainly the menu of the app and the basis for the VR stereoscopic video player) in Unity. The tests were successful and feedback was received from the client.

Introduction

The Ottawa Hospital is looking to provide a VR system for cancer patients. The objective of the project is to create a safe and informative environment for patients for their upcoming medical procedure. The hospital will upload videos to an interface to allow patients to experience their upcoming medical procedure. The objective of the project is to build a program which allows the client to build and run VR simulations. The purpose of the final project is to reduce anxiety and fear while increasing knowledge of a patients procedure.

In order to build a fluent and functional program for this project, the different functionalities must be tested. Without testing the prototype, issues can occur when in use. These issues can be: bugs in the program, broken functionality (such as buttons not doing the proper task), and difficulty of use. The general objective of this prototype is to reduce the risk of issues with the program, become familiar with the building process of a VR program with Unity, as well as receiving general feedback on the direction of the project from the client.

Related Work

For the project, the OCULUS SDK and HTC VIVE will be used. These two headsets are virtual reality (VR) headsets. VR headsets are used to create a “virtual world” where the user is able to view a 360 degree rotatable canvas that is responsive to movements. The project will be developed through UNITY. Unity is a game engine that is used to create VR games with C#. The final program will run through the games launcher STEAM VR.

Testing Objectives

The general objective of the testing for prototype I is to reduce the risk of issues with the program and to become familiar with the building process of a VR program with Unity. Feedback on the direction of the project from the client will also be noted after prototype I is completed. The menu application will be tested to see if it functions correctly where each button does it’s job. The VR player will be tested to see if it functions fluently. The results of this prototype will be used to reevaluate the future and current functionality of the app. The criteria for a successful test is if the VR player works fluidly and that there are no issues concerning the menu of the program.

Testing

The prototype is a comprehensive prototype because many functions will be tested. The table 1.1 lists the testing and results of prototype I. The tests will be conducted incrementally as the functionality of the program is built out. The final tests will be run on a built version of the program through Unity and run on the computer. The program will run and the functionality will be tested by the user. The functionality will be evaluated one at a time and noted if it was successful or not.

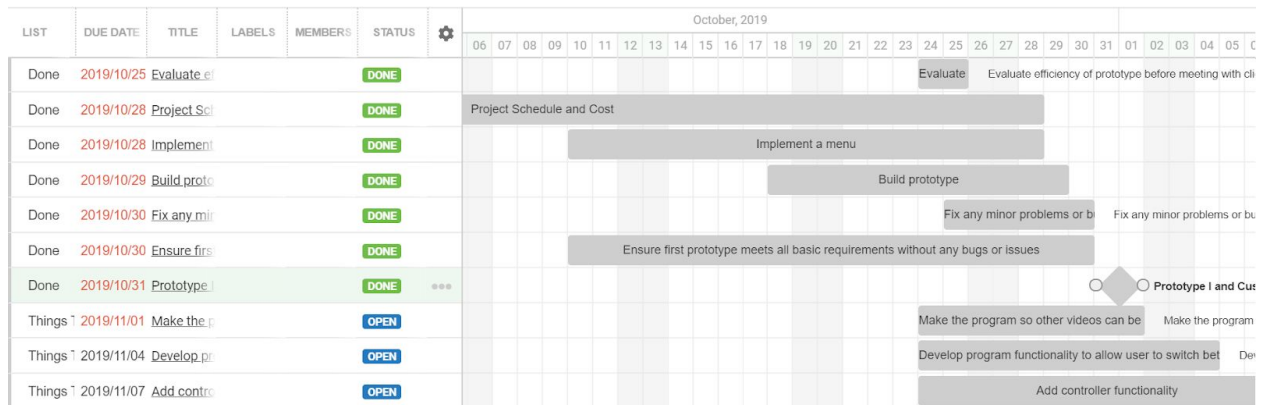
Table 1.1: Prototype Tests

Test	Desired Result
Open Application	Application Opens on Language menu
Test English Button	Goes to English Menu
Test Main Menu functionality	All Main Menu buttons go to their corresponding Tabs
Test if VR player plays video	VR video plays and rotates
Test is "space" key	Space key stops rotation and brings up menu
Test VR menu buttons	All VR menu buttons do their corresponding functions

Timeline

The the majority of both the menu and video player can be built in parallel, but must be both finished by October 29th so they can be integrated together. The testing will last until October 30th because it will be done incrementally. The final test on the prototype, before the feedback is received, will occur on October 30th where a 30 minute testing phase will take place. The testing is dependent upon if the functionality of the program is built out by the 30th, if it is not complete, many functions cannot be tested and there may be issues creating final build for Prototype I through Unity.

Figure 1.1: Gantt Chart



The results from this test will be used to evaluate the current and future functionality of the project. If a current test fails, then the difficulty of implementing the current functionality, if feasible it will be implemented in the next version of the prototype (prototype II), if not then an alternative method of implementing the functionality will be developed. Depending on what needs to be re-evaluated, then the new functionalities will be implemented in the next revision of the prototype. These new functionalities include: working options (volume, brightness, etc); working video selection (grid or URL); and English/French versions of the program.

Results

Table 1.2: Test Results

Test	Desired Result	Result
Open Application	Application Opens on Language menu	Application Opens on Language menu
Test English Button	Goes to English Menu	Goes to English Menu
Test Main Menu functionality	All Main Menu buttons go to their corresponding Tabs	-Select simulation goes to Select Simulation Menu -Settings goes to Settings menu -Help goes to Help menu -Language goes to Language menu

		-Play goes to VR player -Exit terminates program
Test if VR player plays video	VR video plays and rotates	VR video plays and rotates but is choppy
Test is "space" key	Space key stops rotation and brings up menu	Space key stops rotation and brings up menu
Test VR menu buttons	All VR menu buttons do their corresponding functions	-Play plays video -Pause Pauses video -Exit to main menu Exists to main menu - Restart restarts video* -Rewind rewinds 5 seconds* -Forwards skips 5 seconds forwards* * these 3 buttons were difficult to test because the video was choppy *

Feedback

After presenting prototype I to the client, the only piece of feedback was that the video player has to be Stereoscopic and tested in VR. The first test in prototype II is to test the program in VR (using the headset) and Stereoscopic video with the HTC vive.