Introduction to XR: Applications and Technologies EEMT21

Assignment 1: Interactive Environment design and production in Unity

Weight: 40% of the total grade

Submission Deadline: Tuesday, March 5th, 2024

Introduction to making VR environments: create an original 3D interactive environment in Unity

Description:

This assignment requires you to create and develop an interactive 3D environment, using Unity software, that is a creative response to the brief and original topic for a user. You will produce a standalone application, as a .exe file, that you can distribute to potential users. They will be able to download your application and experience on a computer. (At a later stage, the environment might be experienced in the browser, using a headset or an immersive room but this aspect is not being assessed here). Using 3D graphic assets*, audio and interactivity with the environment, you will present an engaging experience that shows your ability to research, technical skills, creativity in using the technology and designing an meaningful experience for the end user. You will showcase the environment and experience, as a standalone application built in Unity as a .exe file, record a video demonstrating and explaining your Unity project, record a video of the application being used/played, and write a report on the process.

**from the Unity store or created in other software*

Learning objectives: (further instructions below)

1. Research and Analyse: investigate experiences that are similar to/inspire the one you want to create; research can draw from XR as well as other media formats; present a comprehensive summary, analysis, narrative of the experience for the user (from launching the application to what they will experience in the world) and motivation for the chosen area/topic and how you are going to address it.

2. Create and Innovate: Use Unity software tools to design a cohesive, engaging and functioning application; demonstrate how you made the application in Unity by creating a video of the Unity project; create a video to show gameplay.

3. Reflect and Evaluate: Write a coherent and clear report that outlines your process, from the motivation for creating the experience to technical production and reflection on the process.

ASSIGNMENT Instructions

1. LO1 - Research and Analyse

The experience that you design should have a clear intention and application and should show your ability to think creatively about the *application and use* of the interactive environment. Some suggestions for applications include, but are not limited to:

- a cultural heritage interest that you have,
- a mini-game,
- a technical simulation
- an interactive music video that interprets or reflects the music
- an interesting and imagined space (psychological/physical) that you want us to experience.

NB: only use original music that is either your own or from someone whom you have permission.

Conduct research and develop an outline/synopsis for the interactive environment, outlining its application and what it is addressing, how the user experiences your application (e.g. what happens in the world and whether they experience it on headset/), what you want the user to experience, visual and audio design, interaction design in the world and narrative flow through the environment.

2. LO2 - Create and Innovate

Using Unity, create an *original* 3D interactive environment that contains **all** of the following elements:

A. 2 contrasting rooms/areas/spaces in the environment
B. 3 or more complex 3D models (from the Unity Assets store; if you are comfortable making 3D models, you can incorporate these)
C. New textures/materials (on terrains or objects)
D. skybox(es),
E. lighting,
F. 2 or more animations,
G. 3 or more interactions,
H. audio and music
I. Give your piece a title and add your own name as creator.

Combine all elements into an engaging and functioning application that contains clear instructions for use. Include an exit function for the user and provide instructions for use (this can be in the form of a menu or a button on-screen).

Functionality of the application is also very important i.e. the user should understand what they need to do to use your application and how to move around. *Include any instructions that might seem appropriate.* Consider including details on what they might need to do/achieve in the world. Create interactions that allow the player enter, exit and if necessary, control functions in your application (e.g. turn on and off music). you can also include some principles of Virtual Reality locomotion, if you feel it is appropriate.

3. **LO3 - Reflect and Evaluate**

Write a short report (max.3 pages) that explains the process (details below). Include the links to the required demonstration videos.

You will need to provide clear details on your idea in the report: a clear description of what we are experiencing and why. If you are doing an interactive music video, for example, provide clear details on why the chosen music inspired the space, visuals and interactions.

Report structure - write a report outlining the following:

a. The type of environment you have decided to make (e.g. music video, application in gaming etc) and a short synopsis of the context (e.g. other pieces that are similar or may have inspired your idea.
b. Synopsise the experience we should have in your environment; from the moment we open your application to closing it. Provide any instructions we might need to use the environment.
c. Provide clear details as to how you addressed incorporating the items listed under the LO2 section above. If VR locomotion is an important consideration for us, provide clear details and description of this
d. Provide any planning documents such as level design, drawings of original objects, menu design etc
e. If there are any custom/imported elements, provide details on what they are called and if necessary, how you created them.
f. Give clear details on the link between the 3D visual assets and audio/musical content.

STEPS TO COMPLETION and SUBMISSION

******NB: Create filenames with clear indication of your name and the content e.g. Fionnuala_Conway_Ass01report******

The following items are required for assignment submission:

1. Video of Unity project - make a screen capture video of the Unity project, showing off the features you have included.
2. Application: build .exe file. (How to do this is covered in Lecture 6) and zip all the files and subfolders. Ensure that it works: send the zipped file to a colleague and checking it.
3. Video of gameplay: launch the .exe and make a screen capture video of the gameplay, showing off the world and various features. This video should show the launch of the environment and interaction with the world you have created. Incorporate as many points of interest as you would like us to see (Up to 3 minutes)
4. Online materials: upload the gameplay video and the Unity project video to an online source e.g. Youtube Private
5. Create a post on the Blackboard forum and add the online links to your videos. Include a brief description of your piece (title, description of the application). Please ensure that the link is accessible to the instructor and other specified evaluators
6. Report: write the report. Include online links for the gameplay video and Unity project video.

7. Zip all the files for final submission.
8. Submit the zipped folder and report to Fionnuala (conwayfi@tcd.ie) and MMT office (murphc49@tcd.ie) by uploading it to Filesender. (https://www.heanet.ie/services/hosting/filesender)
9. LOG OF SUBMISSION: submit your assignment report to Blackboard: this is very important as it is a *record of your submission*. In Blackboard, go to the Assignments link and submit the report for the particular assignment.

Grading

Marks breakdown:
Assignment 1 is worth 40% of the module.

The assignment is marked in the following categories:

- Idea/creative application (15%)
- Production (15%)
- Report (10%)

Academic Integrity:
All work must be original, and proper citations must be provided for any external sources. Plagiarism will result in a failing grade.

Student responsibility:
It is the student's responsibility to ensure that all required files are present and working. If files are missing or not working, the submission is considered to be compromised and marks may be deducted.

Late submissions:
Submissions received after the due date will be penalised by a *deduction of 5% of the assignment, per day.*

Please contact Dr. Conway, conwayfi@tcd.ie, if you think you will be submitting past the due date.

Random Viva Examination
Please be aware that if there is any suspicion or evidence of artificial intelligence or unauthorized technology being used in the completion of assignments, a random viva (oral examination) may be conducted. This examination aims to verify the authenticity of the student's work and understanding of the subject matter. Failure to comply or successfully complete the viva may result in penalties been applied.