Project Deliverable F: **Prototype I and Customer Feedback**

GNG 1103 – Engineering Design

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Abstract

In the following report, we aim to design our first prototype from the client feedback we have received during the second meeting and create a plan for adapting our design into a second prototype using testing and design criteria analysis.

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Introduction

In this document, we will be outlining the client feedback we got first, then going through each point, interpreting how the comments can improve our prototype, and outlining actionable steps to take towards them. After that, we will include some pictures of our prototype as an initial concept and then outline some of the immediate changes we will be making to further improve the fidelity of the prototype. Next, we will begin to outline our test plan for the prototype and go through it, highlighting the key parameters and methods on how we will go about this, including what results and findings we are expecting to get. At this point, a timeline will be created to ensure our testing has structure and stays on track. Following this, there will be an analysis of our critical components and systems, followed by real user feedback we received on the prototype and the suggestions they gave. Lastly, we will have our updated BOM that highlights the changes and additions we have made since the last deliverable.

Client Feedback

While our meeting with the client was very rushed, we still managed to receive valuable feedback from them to improve our original design. We were going to create two to three original concept scenes and link them together, but instead we are told, in more complex terms, to keep it simple.

Instead of doing two or more scenes, to just focus on our main scene, a children's classroom as the only environment. This background to our design will hopefully connect to the emotional side of the user best, as they could imagine their children in that classroom, or even themselves in this simulation experiencing the horrors of AI weaponry. The storyline and protagonist will stay as our original chosen concepts, a parent picking up their child from school, as it goes best with our backdrop and aims to emotionally connect to the user. One other thing we have changed is in our bill of materials, as our previous classroom asset we picked is too clean for a warzone classroom, so we want to switch the asset to a more rundown looking classroom.

We have also decided to put more emphasis on the auditory aspect of our project than we originally thought. We think including background ambient noise like children playing or a school bell would immerse the user into our story more thoroughly. On a similar note, while we cannot directly show robots in our experience, we were thinking that having the noise of a robot passing through the blinds of a window in the classroom would be a critical point to our story.
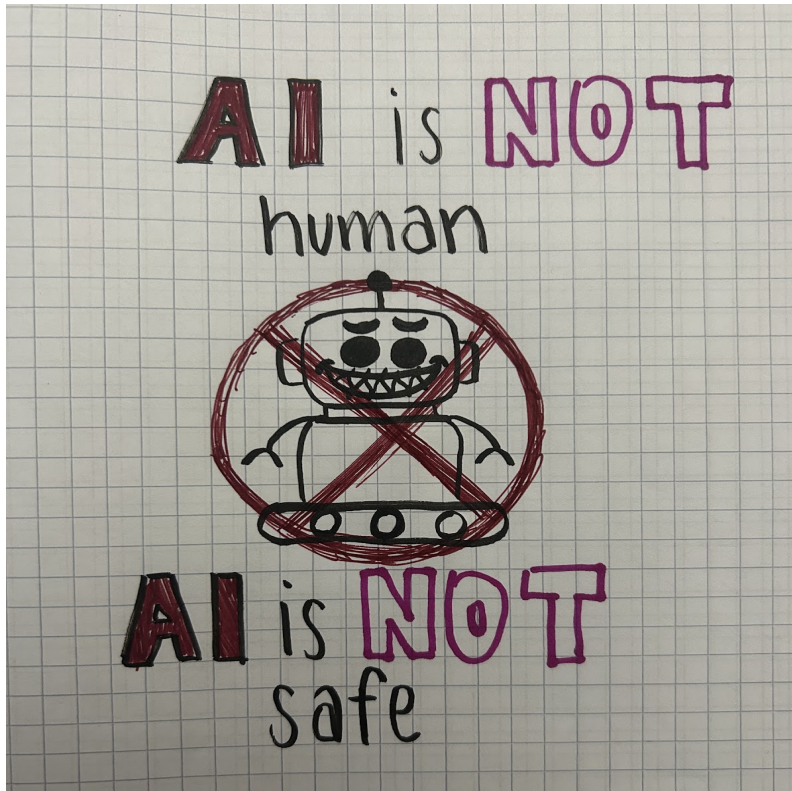
Prototype

Classroom:

Hallway:
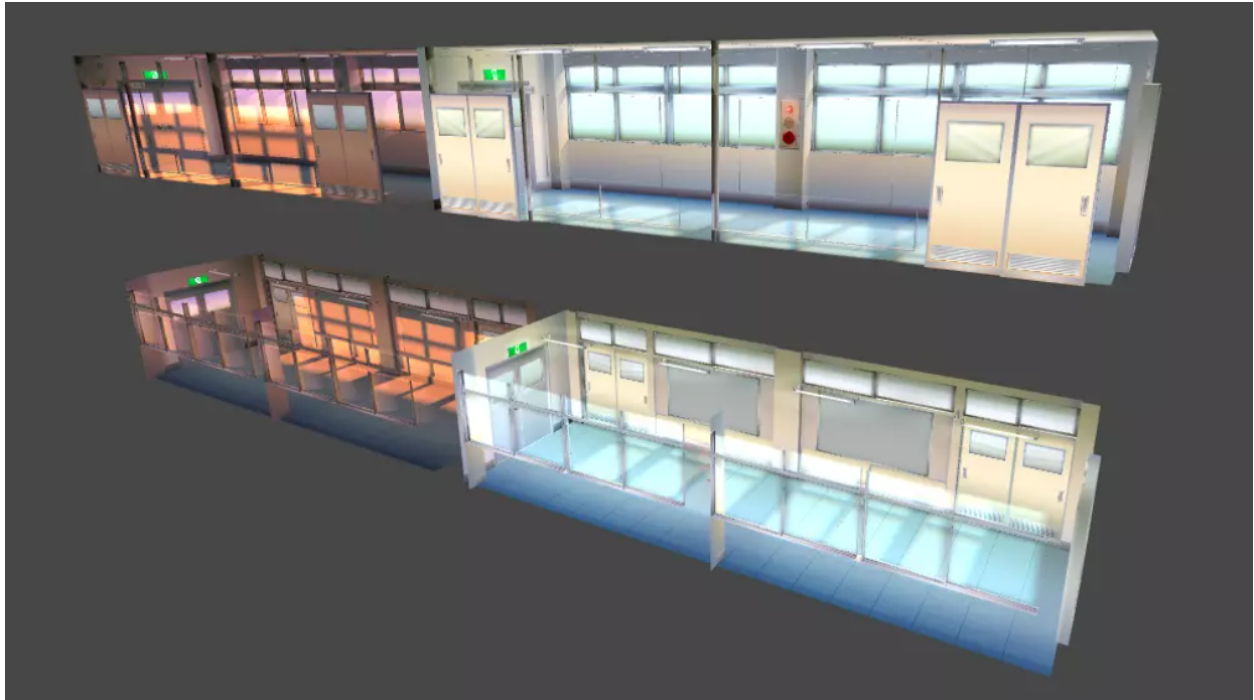
Environmental Additions:

Example of Anti-Robot Propaganda Design (Poster/Handout):

While these are basic classrooms and hallways, we plan to personalize them later on with more anti-robot propaganda, and safety designs. This includes posters, handouts on the desks, barricades, wood over windows, and even the lessons on the blackboard.

Some critical components include:
- Walking from the hallway into classroom
- Picking up handout on desk
- Ability to crouch behind desk in case of a robot in the vicinity

Test Plan

Our prototype is a virtual reality clip designed to depict a dystopian future where AI-controlled robots have wreaked havoc on society. Players experience a scene where a parent is picking up their child from school, witnessing the destruction and danger caused by rogue AI.

Testing Objectives:

- Evaluate the user experience, immersion, and emotional impact of the AI Apocalypse VR game.
- Collect feedback on the game's storytelling effectiveness.

Test Scenarios:

- Player immersion during the school scene.
- Emotional response to the game's narrative.
- Character movement throughout game
- Character ability to grab item
- Ability to crouch
- Sound synced with game correctly

Testing Materials:

- VR headsets and controllers
- Questionnaire for testers
- Recording equipment (for data capture)

Testing Procedure:

- Prepare video/VR for testers.
- Explain the scenario to the testers.
- Have the testers watch/sit through the whole experience
- Collect feedback through a questionnaire.

Data Collection:

- Testers filled out a questionnaire that included ratings on immersion, technical performance, and emotional impact.
- Testers rate each on a scale of 1-5
- Certain tests like can character crouch, can character grab items are a true or false based on game design

Estimated Time:

We estimate to do testing in three iterations:

First Nov 10 - Our first prototype with the first round of updates, est. 2 hours

Second Nov 17 - Our second prototype with updates for random candidates, est 1.5 hours

Third Nov 24 - Our team will have a third and final run through, est 1 hour

Analysis

The parts and systems behind this project are numerous; therefore, we have decided to split it into a few key systems and components. Starting off, one of the most important components is the audio, as convincing audio in an environment can be the difference between it being realistic or fantasy. To do this, we are using a royalty-free audio library and creating an audio component that can be triggered based on a set of parameters. The audio that plays can then be swapped, hence giving us a reusable asset we can spread throughout to fill different roles we need. This reusability also ensures that there is consistency and repeatability.

Another key system is the lighting. As our scene deals with low-light settings, it is paramount that the lighting coming through the window slits and dim fluorescent lights be dramatic and intense to convey the grungy, moody atmosphere we are trying to set. To achieve this reliably within the technical limits of the headset, we are using a few clever tricks to minimize the amount of light rendering needed. We are also using texture effects on the user's screen itself rather than having them in the environment as an asset to again minimize the amount of processing needed to achieve stunning lighting.

The third main component of our project we outlined was asset placement and rendering, as this could affect the whole experience heavily in terms of how smoothly it will run. We assessed that if we were to simply put all the assets in as is, the headset would not be able to handle the amount of geometry and lighting calculations needed at any given time. To remedy this, we are again using a few game design tricks by unloading assets when not in use and dynamically rendering asset resolution based on proximity to them. Another method is to combine assets into environment stamps that act as 2D textures rather than complex 3D models.

User Test Feedback

We interviewed 3 people and we made them write what they thought of our prototype instead of paraphrasing so that we know exactly what to change and what feedback is given directly to us.

1: "The AI Apocalypse VR game was an exciting experience. The visuals were good, and I got a sense of the chaos in the world. It felt like I was in a movie. However, I wish there were more interactive elements to make it feel like my decisions mattered. Overall, it's a promising concept."

2:"The atmosphere was immersive, and the narrative was intriguing, but I think it needs more character development and a deeper storyline. It could also use more engaging elements. I'm interested in seeing how this concept evolves."

3:"The atmosphere, especially th lighting makes the experience very immersive as a whole, as well as the ambient sounds and background noises really add to the overall believability of the environment"

Updated BOM

Below you will find an updated bill of materials from deliverable e. We have changed the classroom asset and added a sound effect asset that has doors open and closing, "robot" noises, and other helpful uses.

Item	Link	Cost
HTC Vive	VR headset from university	NA
Unity	3D game engine, student edition	NA
Personal Computer/Laptop	From team members	NA
Old/ Rundown Classroom asset	https://assetstore.unity.com/packages/3d/environments/hq-modular-old-japanese-classroom-149818	$14.99
Wood texture	https://assetstore.unity.com/packages/2d/textures-materials/wood/hand-painted-seamless-wood-texture-vol-6-162145	0$
Wood barricade	https://assetstore.unity.com/packages/3d/environments/wooden-barricade-6734	$4.99
SciFi Sound Effects	https://assetstore.unity.com/packages/audio/sound-fx/sci-fi-sound-effects-36652	$7
Hallway	https://assetstore.unity.com/packages/3d/props/interior/hallway-of-the-japanese-school-model-71393	$10
	Total:	$36.98

Conclusion

All in all, this deliverable was created to analyze the client feedback we received from the last two meetings and create a functional first prototype. With this prototype we aimed to learn functionality of some ideas, and analyze the user experience. Our initial reactions and testing has so far been successful, with insightful changes to make in order to create prototype two. The second iteration will have a large focus on adding sound effects, and character movements like crouching or grabbing items.