KIT208 Assignment 4 Report

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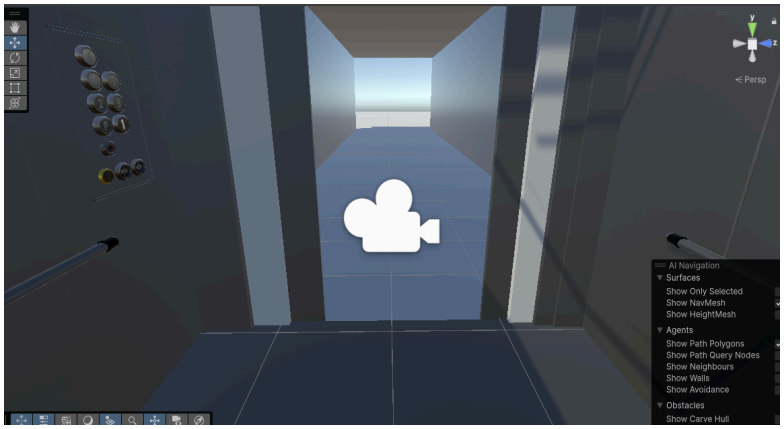
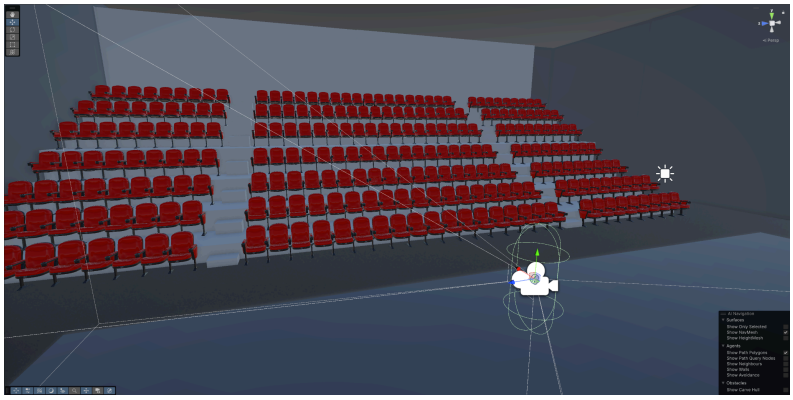
Introduction



Elevator scene

Potential menu room



Theatre scene

The application serves to help users confront their fears and overcome exhibited avoidance behaviours through a series of scenarios. These scenarios gradually increase in intensity to help the user slowly expose themselves to the situations in a controlled environment.

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Description of Application

When the user first starts the application, they will be greeted with an open area to look around. In front of them will be three pedestals with buttons on them, and floating text above. Each of these will represent the different scenarios to put the user through, from speaking, eye contact and crowded areas. Whilst they can look around, they won't be able to actually move around, prompting the attention of the user back to the buttons. Once the user presses one of these, they will be taken to a different room depending on what scenario they choose, each with three buttons with low normal and high written text above them. The buttons indicate the intensity of the scenario. The user will then press on of these, to begin the scenario, or if they want to go back, a different coloured pedestal to the side of them will house the back button. In the scenario, a brief text prompt will appear guiding the user on how to complete it. For something like speaking, this could be a prompt saying "Make a speech to the audience!" as well as a bar that fills up as the user speaks. When the objective is complete, a congratulatory message is displayed, and the user returns to the previous room with the different intensity level buttons. This same formula occurs for each of the different intensities and each of the different scenarios.

This application provides a realistic and especially immersive simulation of these environments thanks to the use of VR technology, without being overwhelmed by these situations in a real world scenario. The different intensities provided help the user gradually increase their exposure to these stressful or anxious situations, and help gradually overcome their fears of them. This sort of application could be a preferred or alternative method of treatment to these behaviours instead of potentially ineffective methods, or no treatment at all. And this is all helped with the fact that the application can be used in the comfort of the user's own home, at their own pace as well.

Description of Interface Solution

The interface technology being used is Virtual Reality (VR). VR allows the user to be immersed in a realistic setting to overcome their avoidance behaviours whilst giving them the ability to instantly disengage by taking off the headset if the scenario becomes too overwhelming. It allows for a safe space to practise social pressure The user can use their natural movements to interact with the application, including making eye contact with other people to trigger dialogue, picking up objects like microphones and text-cards, using their voice to speak into a virtual microphone, and pressing buttons to control an elevator. This lets them put their focus into overcoming their avoidance behaviour instead of having to learn and remember the applications control scheme.

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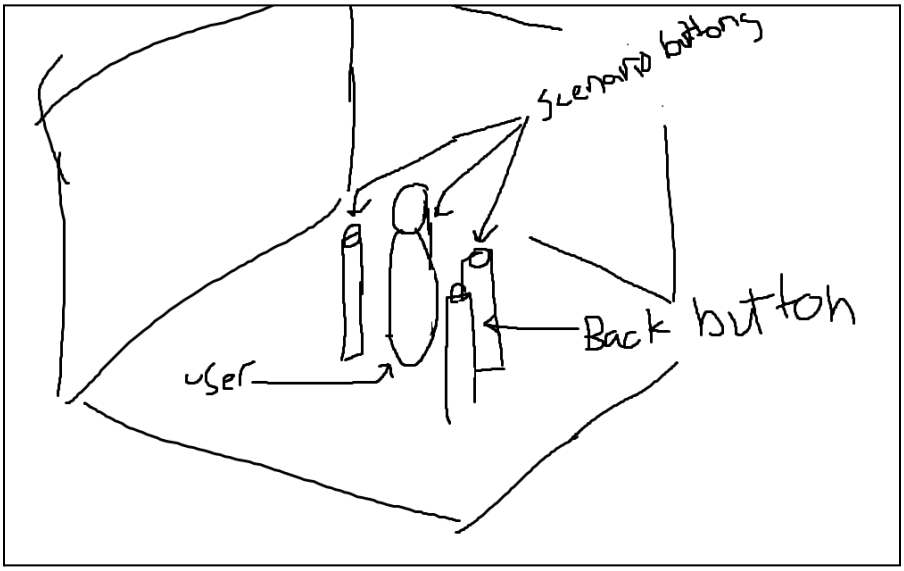
Interaction Design

The interactions we are including are grabbing objects, pressing buttons, speaking, and looking to make eye contact. All of our interactions directly relate to overcoming an avoidance behaviour. Grabbing allows the user to pick up objects to read from, a common task when speaking in front of a crowd of people. This is to aid in overcoming stress and anxiety of public speaking. Pressing buttons is for interacting and used in conjunction with a crowded and limited space inside an elevator. This interaction encourages the user to stand out in the group and take an action in spite of the inaction of the people around you. Speaking into the microphone allows the user to overcome their fear of public speaking and forces the user to actually come up with something to say for the duration of the scenario, forcing them to participate instead of standing quietly on the stage in front of the audience. Looking at other people in the application allows the user to practise making eye contact and becoming comfortable with the act, giving positive feedback with friendly dialogue from the person they made eye contact with. These interactions help confront the avoidance behaviours the user is trying to treat, in ways more effective to that of a computer mouse or monitor screen, whilst allowing the user to actively engage with and affect the scenario and environment around them.

Storyboard



The menu of the application, with the different scenario buttons and a back button if they have pressed one already and moved to the intensity selection menu.

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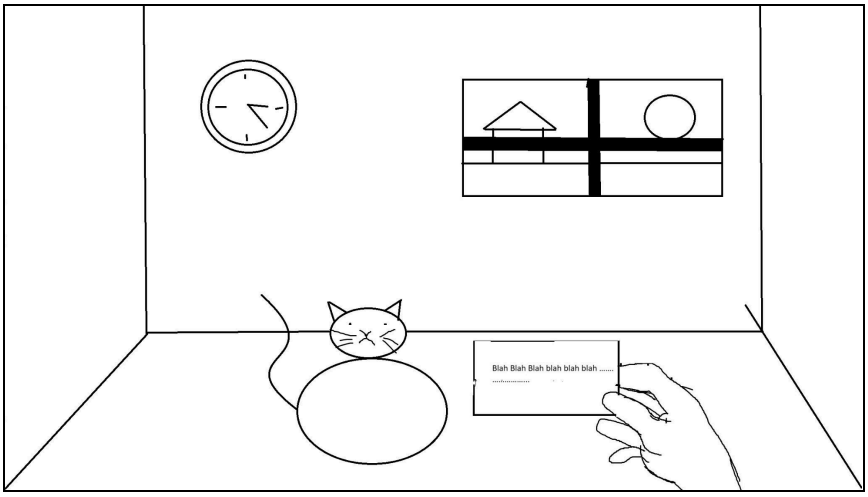
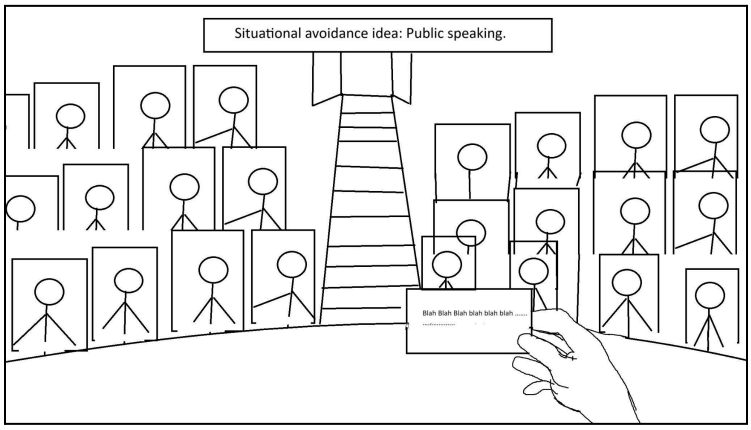


Public speaking to a cat, as a starting point.



Public speaking to an audience, after building up from speaking to a cat. There could be a stage in between where you are speaking in front of a small group, then as the most intense scenario, speaking in front of a theatre or auditorium.

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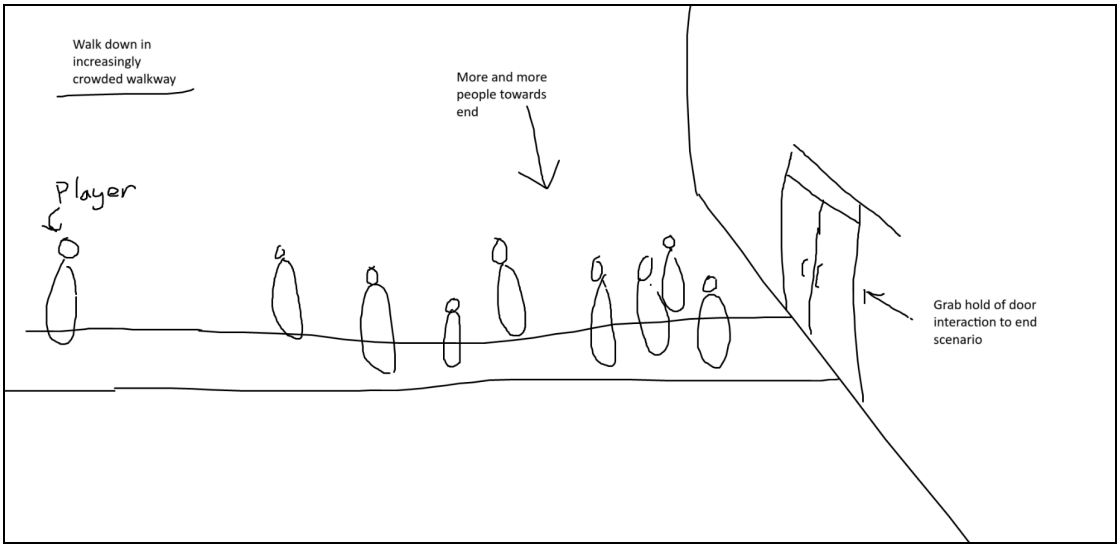
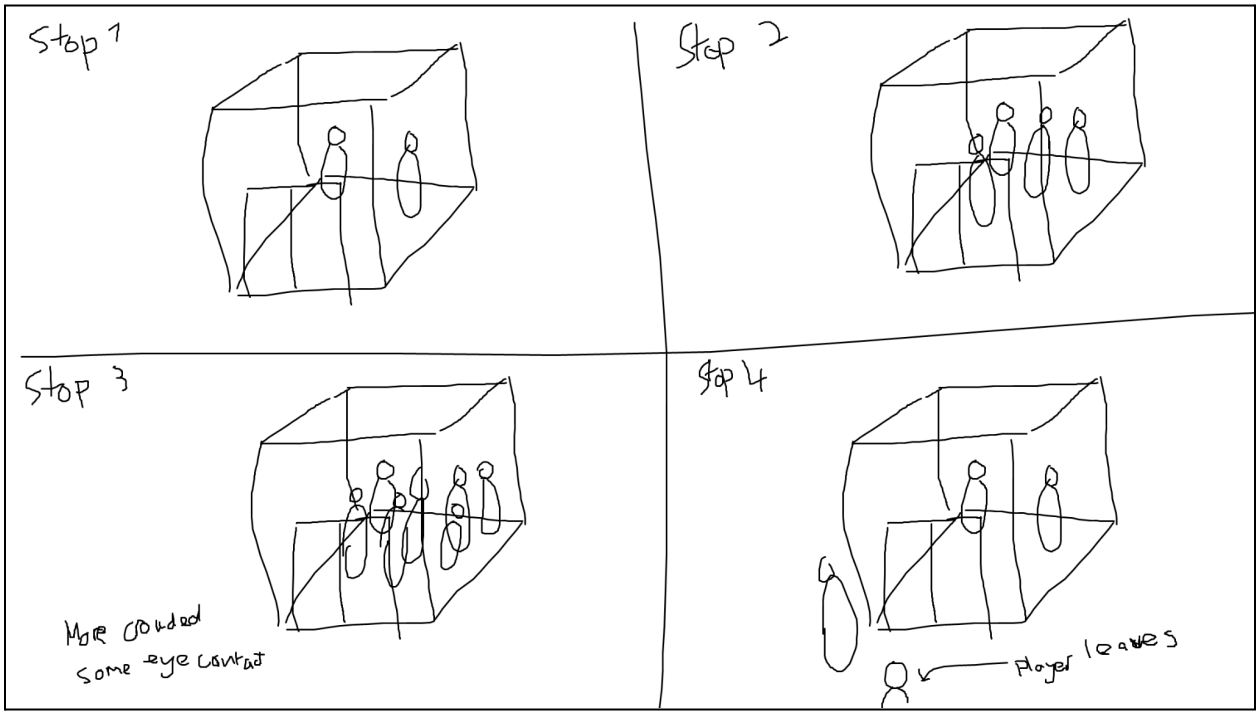


Walking through a crowded space, people may also make eye contact with play. Have to walk forward and reach the ending doors to complete the scenario. Could either be different densities of people to gradually increase the exposure, or ramp up over the time of the scenario. Maybe have the player look at guards around the door to move them aside.



Player waits in an elevator for different stops, gradually getting more crowded with people, until the player presses a button at their stop to open the doors and leave.

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Technical Development Planning

The interface is designed for VR software, and tested for the Meta Quest 2 and 3. The MetaXRD software development package will be needed for creating the VR player and interactions in the game.

As for the application itself, we have a few ideas on how to handle any complications. For the elevator scenario, rather than have an elevator actually move the player up, we can instead have multiple models of the hallway outside the elevator overlapping, and toggle each on and off at the different elevator stops. A sound could be played in the elevator to further sell the illusion of moving upwards. The streetway scenario with the user walking down a crowded street to a building, will most likely need invisible walls on the roadside to prevent users from walking off the sidewalk. As for the people rushing towards them, the models should not have a collider so as to not block the player as they move. For the stage scenario, The room will need to be modelled, and the audience put into the chairs, but no further techniques should be needed to complete it. The specific interactions in the project also need to be mapped out. For the interaction requiring the user to speak, we plan to make use of the meta quests in-built microphone. Unity has in-built functions to detect connected microphones, and as such we can automatically display the microphones connected, and prompt the user to select the correct one, or if there is only one microphone connected, we can automatically use it. This will let us pick up when the volume is spiking more than usual, indicating when the user is speaking and thus when to fill up the completion bar. For the buttons in the menu and on the elevator, the prior tutorials in this unit for creating VR buttons will suffice, as well as previous code for triggering events with them from prior assignments. The eye contact interaction at the end of the crowded street scenario will be tricky, and might not be done within the timeframe. It will most likely require ray tracing a ray from the direction the user is facing onto a place of the two people by the door, which when looked at for a certain amount of time, will trigger an event and end the scenario.

Initial 3D models

These are the assets that have potential use within Assessment task 5. This is subject to change as multiple assets listed here are intended for the same purpose and may only be used if previous selections do not work or are not suitable for the application. New assets may be added during the development of the VR application when needed.

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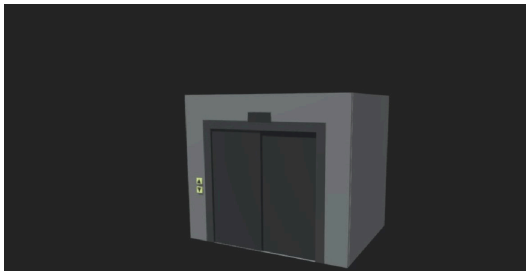
Elevator assets:

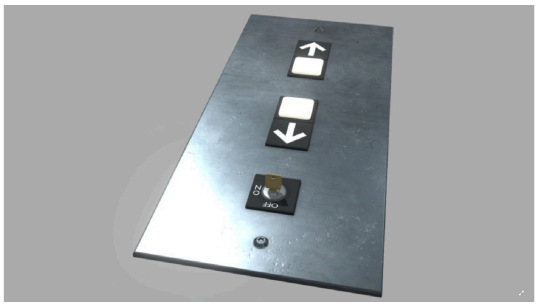
Simple Elevator with Animation by lhaegy.fu

Elevator by Amine



Elevator pair of doors Free 3D model by kleinebaas

Elevator Buttons by darksoundlab



Elevator _ Elevator Key_7_MB by Mehdi Shahsavan

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Various people

Animated characters pack 1 by Kenny

Animated characters pack 2 by Kenny

Road model/textures

RPG/FPS Game Assets for PC/Mobile (Industrial Set v3.0) by bcgames1

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Chairs for theatre scene

armchair theatre chair Free 3D model by envergurbanov

ArmchairCinema by Andressa_Reigadas

Stage and microphone

Modular Theater pack Free 3D model by cstroud123-cs.

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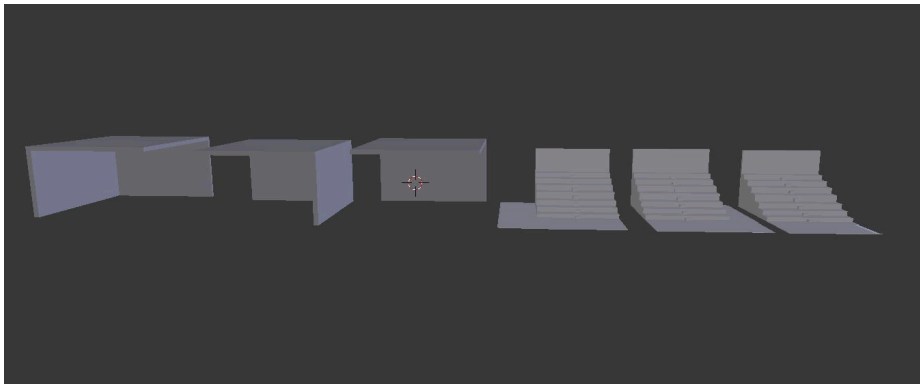
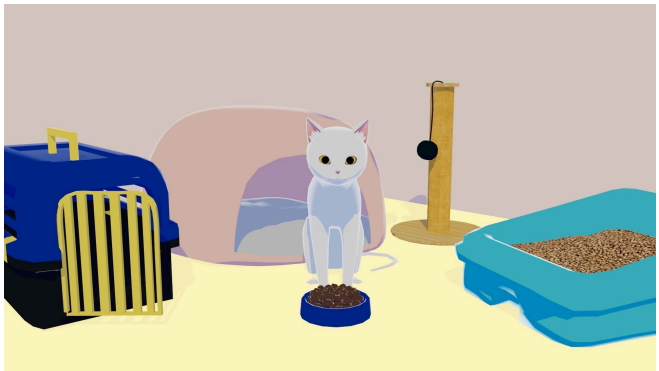


Mic Stand with Condenser Microphone Free 3D model by kevin1998223

Cat model, interior decorations for a house.

Low-poly Cartoon cat and pet supplies Free low-poly 3D model by kokosaqpan



Pack Gesta Furniture #1 by Gest

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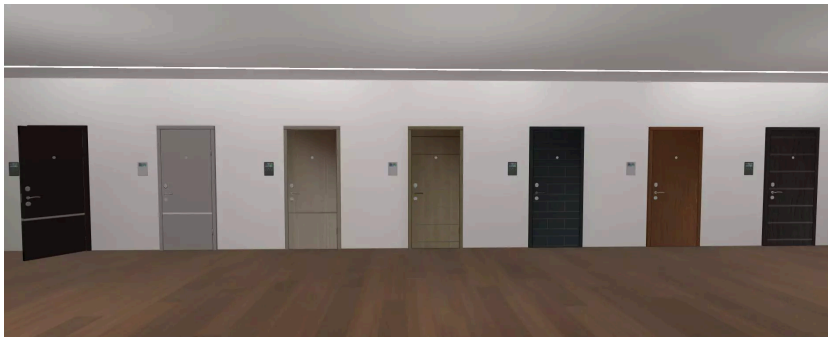
Door Free Pack by Aferar



Conclusion

Our application aims to help confront and overcome avoidance behaviour issues, particularly situational and somatic avoidance in the users. Various interactions and scenarios will be utilised within the application to help achieve this goal, aided by the utilisation of VR technology.

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References

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