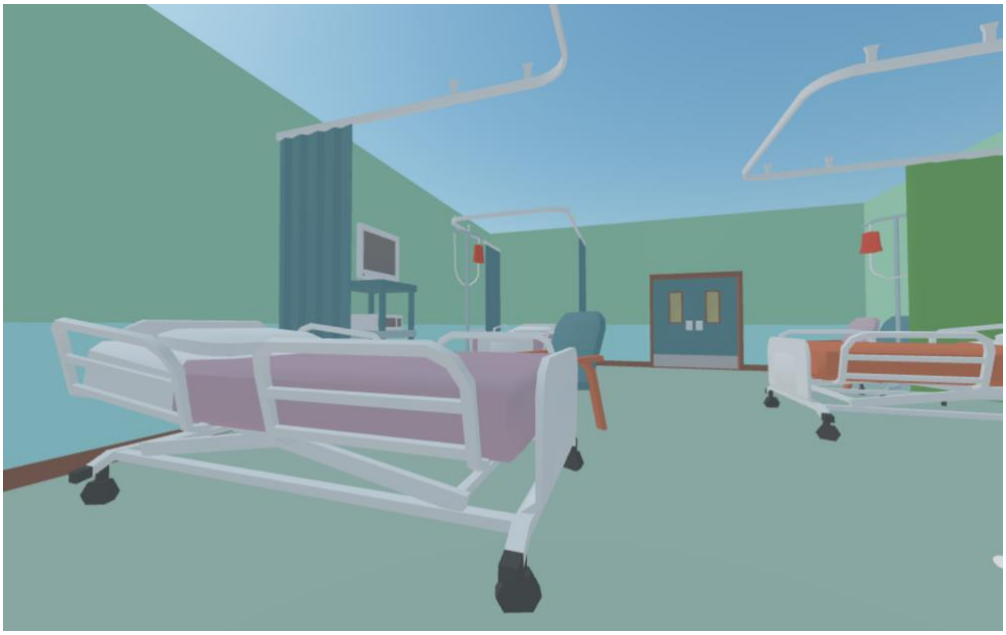
Patient Experience VR

Designing inclusive, adaptive, and voice-enabled multi-patient hospital rooms using Unity & Virtual Reality (VR)

User Guide

What: VR prototype of an inclusive and voice-enabled multi-patient hospital room. Using the cross-platform game engine Unity, this prototype combines VR and Google speech recognition to simulate a patient's experience interacting with the patient room environment and having the room adapt to the patient's needs (in this case, changing the lighting).

Why: For recovering patients, shared hospital rooms aren't conducive to patient healing as they don't support patients' sense of comfort, privacy, and safety. Our definitions of these concepts are unique to each of us, that's why personalization is so important within multi-patient hospital rooms. Because some patients in recovery might be weak or possess various debilitating impairments, my project team and I explored the possibility of creating a 'Patient Experience' app that allows patients to quickly and easily request assistance from hospital nurses and/or communicate with different aspects of the patient room environment, to adapt the room to their needs. The desire to control the lighting in hospital patient rooms came up a lot in our interviews and co-design workshops. As a team, we also identified the importance of offering multi-modalities in applications to better accommodate individual patients' needs and their abilities. Therefore, the use of speech recognition affords users the flexibility of not having to use their hands or get out of their beds to make adjustments within the room. All that is required is the use of their voice.



View of the 3D virtual hospital environment.

Compatible Devices


VR Headset


Personal Computer

How to use this prototype

1. Put the VR headset on. If you are using a PC, simply open the VR file.[1]
2. Direct your gaze to scan around the VR environment; get a feel for the room. If you are using a PC, use the ← ↑ → ↓ arrow keys to move around. To look around the room, Left+click and pan with your mouse.
3. The voice assistant (Pex) will start speaking automatically once the VR file is opened.
4. Speaking clearly, instruct Pex on how you'd like the lights adjusted. At the moment, you can only ask Pex to either increase/reduce the lights, and turn off/on the lights.[2]
5. Pex will carry out your request based on whichever action you requested.

Link to VR demo (Vimeo): https://vimeo.com/533338837
Link to VR demo (YouTube – with captions): https://youtu.be/DGmcCd1aVPY

[1] This prototype used mouse direction in place of 'gaze' because the Oculus headset was inaccessible during class time. However, the prototype is enabled for headset use.

[2] The speech recognizer uses the following specific keywords: light, reduce, on, and off. It also uses words in front of it for context, which is how it's able to understand what you are saying.