

Assignment for a designer who is not afraid of a little programming Social touch and presence in VR for patients in quarantine

In short

Your job	You are going to develop a proof-of-concept VR application combined with haptics and likely cameras and additional tracking.
Your goal	To provide a sense of togetherness for people who are not physically together. In this case: patients who are in quarantine and their friends and family.
Possible solutions	<p>The solution needs to be acceptable to older users, and be usable by them, with support from caretakers. Within the overall project this is a part of different avenues will be explored. Your road is the high-tech avenue with VR and haptics. For the rest there is a lot of freedom to explore what works (best) for the end users. The focus can be adjusted based on your interests and skill set.</p> <p>The feeling of being together is mediated through various senses. The proposed project focuses on exploring vision, touch and sound (other potential modalities are e.g. smell, warmth). Each of these modalities comes with both sensing and actuating. E.g. it is one thing to provide haptic feedback on a shirt, but you also need to think about how the user on the other side will provide that input. A similar challenge exists for vision.</p> <p>A relatively simple early proof of concept could patch through cameras and audio for vision, and include a wizard-of-oz setup for the haptics, meaning that there is an operator in the loop observing what one user is doing and triggering the right vibrational feedback on the vest of the other user.</p> <p>Through various iterations the experience for different senses can be improved and/or automated, for example by adding facial tracking (expressions), body tracking, spatial audio, etc.</p> <p>Throughout the project, putting the user at the center is key. Design with them and test with them regularly. Users do not always have to be actual patients, but can be friends or family.</p>
About you	<ul style="list-style-type: none"> - You want to learn about VR development - You want to learn about haptics (vibrational touch feedback), camera, tracking - You like to develop and test new concepts with users



Reason for this assignment

In various situations patients are not allowed to touch others. The COVID rules made the deprivation in terms of social interaction and touch even more apparent as this now happened to many more people. As part of a larger project, we are investigating how we can return social touch to these patients and their caretakers, family and friends through technology. One of the directions we want to explore is using haptic (vibration) feedback in combination with a VR headset to bring people together through vision and touch, to create a sense of presence and togetherness that would otherwise be impossible for them.

Your job

How can you create an interactive experience with current haptics (elita science suit), vr and capturing technology (cameras, imus, pucks, ...) to provide patients with an experience of being close with their loved ones?

- You will explore the domain and technological possibilities, learn about the conditions unearthed in focus group sessions within this project so far and have conversations with various stakeholders to define the requirements for this specific solution direction.
- You will need to obtain experience with the relevant technologies to determine their suitability, and concept various possible solutions. Through small user tests with existing components and wizard of oz techniques, you can determine which directions for improvement will be most fruitful for the end users in terms of experiencing togetherness / closeness.
- One concept will be developed into a proof of concept which can be evaluated with stakeholders. The recommendation is to approach the problem iteratively, improving one sensing modality at a time and testing and improving it along the way with people, as it is difficult to predict what the experience will be like in advance.

The exact focus can be adjusted based on your interests and skill set. There is some budget available to buy any additional hardware deemed necessary to realize the concept.

Your client

Ambient Intelligence (AmI) is a research group that specializes in making our environment smart. We use sensors, data science and augmented interaction to solve all kinds of problems in the areas of health, safety and industry. Examples of our projects can be seen at www.saxion.edu/ami.

The project is part of a larger project **Sociaal aanraken op afstand**, by led by research group Nursing (Verpleegkunde).

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