

CONTRIBUTIONS

With this study I have proven that a user is able to understand and accurately use an artificial sense, not only during a structured task but also when the context was completely open to many interpretations. Also importantly, the users were able to get good results with very little time to practice or to assimilate the new sense. This proves that the idea of creating a system of artificial senses that are able to turn on and off depending the user's needs and desires is viable.

I have recognized two distinct categories of artificial sensing, active and passive sensing. Active sensing is when the user recognizes an experience that will directly be influenced by the use of an artificial sense. The user will activate an artificial sense and start probing their environment looking for a particular response. This is akin to using the sense of smell and bringing your nose close to the source in question. For this type of sensing, the sensor should be in one extremity that can easily be moved in the area to be probed. The fact that the user can see the sensor and confirm its location on the body will only aid in the accuracy of the experience. Active sensing will require feedback that is appropriate to active comparison of a continuous signal.

Passive sensing is when a user needs to be notified of a change in a situation and immediate action is only needed when that change happens. This type of experience is very long term and it needs a signal that is not annoying to the user but strong enough to get the user attention at any moment. This research shows that the use of temperature will be appropriate to this end. It will also be necessary to locate this feedback where the user will not find it cumbersome in a daily routine. This means that coupling the actuator in a wearable design will be most successful. The study used the back of the neck which points to a scarf or necklace. Also the lower back, meaning a belt would be adequate.

As a user experience, passive and active sensing can function in tandem allowing the user to be made aware through passive sensing of a major change and then changing to active sensing for close inspection of the situation. This would, for example, change the actuator from a temperature felt somewhere in the back, to a sensor worn on the index finger and vibration in the right temple.

A set of recommendations has been established in order to successfully implement artificial sensory interfaces in the future and to push the research forward into the future of Digital Synesthesia and artificial interfaces. The placement of the actuators around the body is one of the main takeaways from this thesis. Not only will this depend on general ergonomics principles but there is a clear effect of the type of sensing and relative position to the sensor that will have to be taken into account. Another is the relation between type of signal and type of actuator, some feedback will work better with different type of signals.

Most of the research and direction of the industry around artificial sensory experiences is geared towards a group of users with sensory disabilities. I have proven that not only is the general population able to successfully use these interfaces but also that it can be done in a way that is unobtrusive and comfortable to the user.