Hinkypunk

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Abstract

This report describes the process toward the final design proposition of Hinkypunk. The idea generation resulted in the design direction ambient rhythm in a hospital or home context. This direction was translated to a design opportunity, non-human presence in a care-home. The goal was to enable elderly to stay longer at home. In order to do this Hinkypunk was designed, a system that can interact with people through lighting. To allow for this interaction shape, behaviour and interaction possibilities were defined according to experience and theory.

Authors Keywords

Non-human presence; perceptual crossing; Philips Hue;

Introduction

Hinkypunk is a non-human presence to support elderly in their daily rhythm. It is a system that embodies the lighting in the house and allows for the user to interact with it. Hinkypunk is inspired on the interaction between human and pet and abstracts from these actions. It will stimulate the user to go through the daily activities. Next to that it is a companion that mimics social interaction with pets.

The first step in the process was to define the direction of the design process within the context of a home or hospital, relating to ambient rhythm. In order to find this the results of a brainstorm were mapped according to the paradigms; and; . The result of this were five design directions: a trip to…, weather forecasting, lively, light games, and animal traces. These five directions are described in the pictures on the right.

These directions were presented and from this the design direction non-human presence in the care home context was dericed.

To design for elderly we first needed to understand their needs. In order to find these we discussed our experience with the elderly around us, like our grandparents. The results from this discussion, shown above, were used as inspiration for the concept development.
Sitatus, sed quamusdantem incipsantem qui berferio. Be

Next to knowing the needs of the target group based on experience, a lot of information can be found in the products that are currently on the market. In order to find these we did a round of benchmarking of which the results are shown above. These products and services told us a lot about the current market for products regarding our target group and context and their needs.
Sitatus, sed quamusdantem incipsantem qui berferio. Be
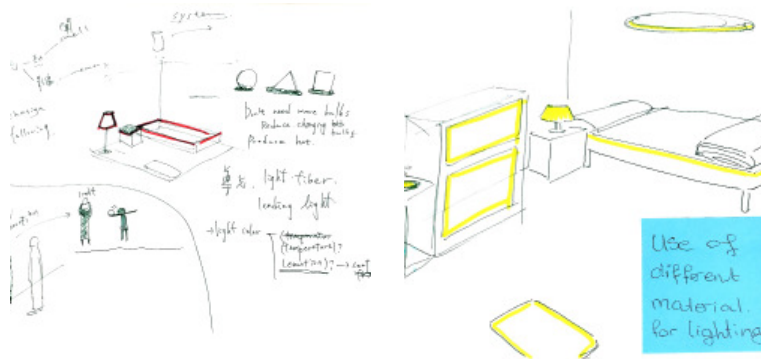
The material optic fiber is integrated throughout the environment within the house. Through this optic fiber the light can travel through the house and can lead the way.

To stimulate social interaction between the inhabitants of a care home environment a common ground of conversation topic is created. This can be either a game that can bring them together, or a common annoyance factor.


When elderly exercise or walk along the device, the light moves in a rhythm. When there are multiple rhythms the light combines these so they can interact with each other.


Each family member has his or her own colour and sound defined by themselves. This can help the elder with early staged dementia to trigger the memory of that person.

Through the environment of the house light is embedded that can perform certain behaviour and stimulate to perform certain actions.
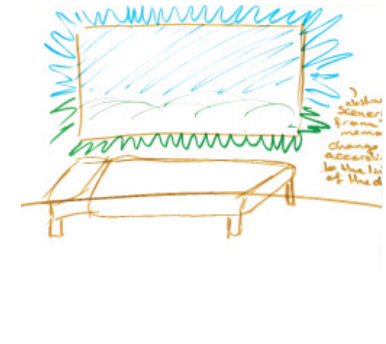
The colorful pane on the wall will take pictures of memories and display them abstracted. As if a painting of a memory made with light.
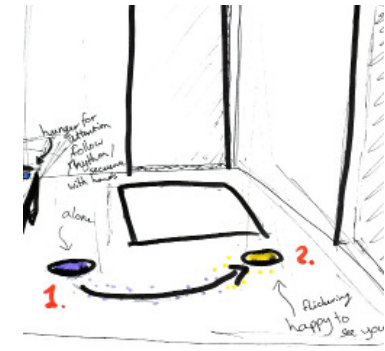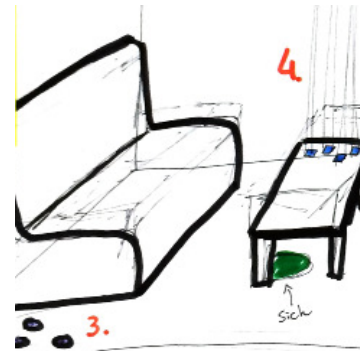
A system of lamps with tangible properties is set in the house. The user can interact with each lamp by touching it or picking it up. The lamps can empower the daily rhythm by lighting up in different places where the daily activity has to take place, therefore luring the elderly there.


A lighting disc will move through the house interacting with the elderly person through lighting behaviour. Where it has spent a lot of time it will leave traces. When it is sick it will hide and the owner has to find it. When it is hungry the owner has to feed it.


When a person get a phone call this is projected onto the wall where a abstract shape becomes a pigeon with a message to make the ringing of the phone visual.
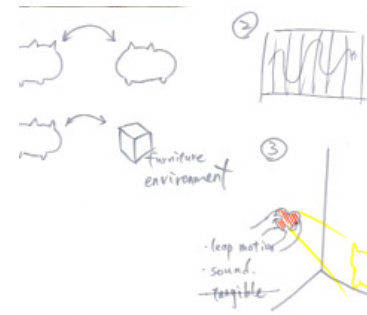

Projecting the traces of pets onto the wall so the elderly can see this and feel connected to the pet while not near it
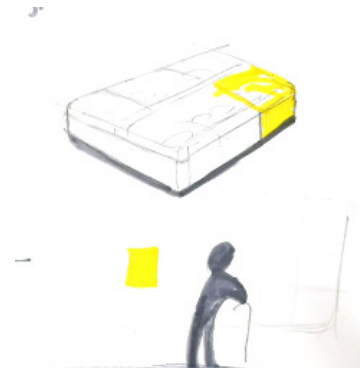
A grid on the wall that corresponds to a pill box and the compartment with the medicine that needs to be taken will light up.
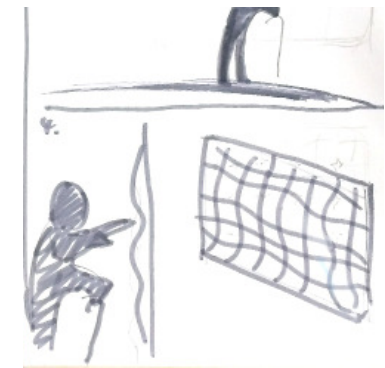
An exercise wall where the elderly can interact with to stimulate movement.

From the previous concepts the best properties were taken and this inspired for the concept in the pictures on this page. It is a lighting system based on the Philips Hue system where one or multiple animal lights can be part of. The owner can interact with the animal lights and they can interact with each other. In order to make it not exactly like a pet the shapes are abstracted and the behaviour is mainly expressed through movement and lighting colours and rhythms.

When adding an animal it will take on a behaviour. The most important one is to keep the elderly company and to empower its daily rhythm. The next animal can for example be more playful or can take a more protective character.

behavior : hide & seek
· breathe
· interact with environment

emotion : · happy · sleeping

· Angry
· Sad
· crazy
· lonely
· Scared
· hungry
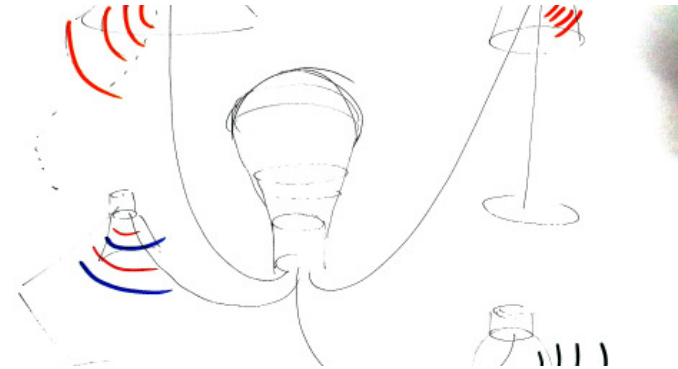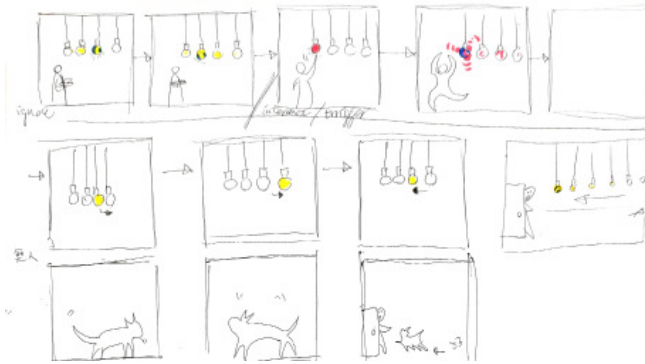
For the next iteration we abstracted the concept more and let the separate form of the animal go and focused mainly on the behaviour. The animal became a creature and the behaviour was not movement, but only the colour, brightness and rhythm of the lamp. The creature can move into the system that is still based on the concept of the Philips Hue [1]. Here it can move from lamp to lamp through the network.
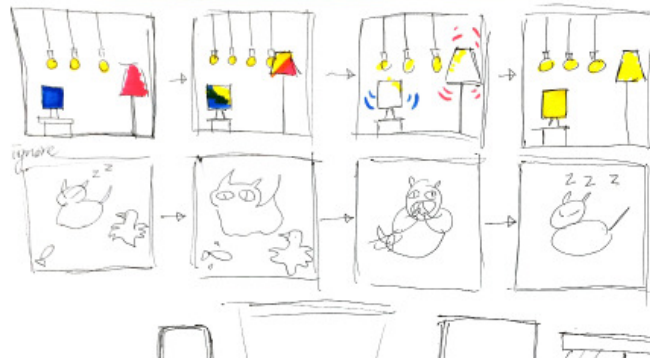
The behaviour is based on the principles described by Eva Deckers on Perceptual crossing [2]. The person can interact with the system by interacting with individual lamps. The creature can have several behaviours within three categories, random or ignore,
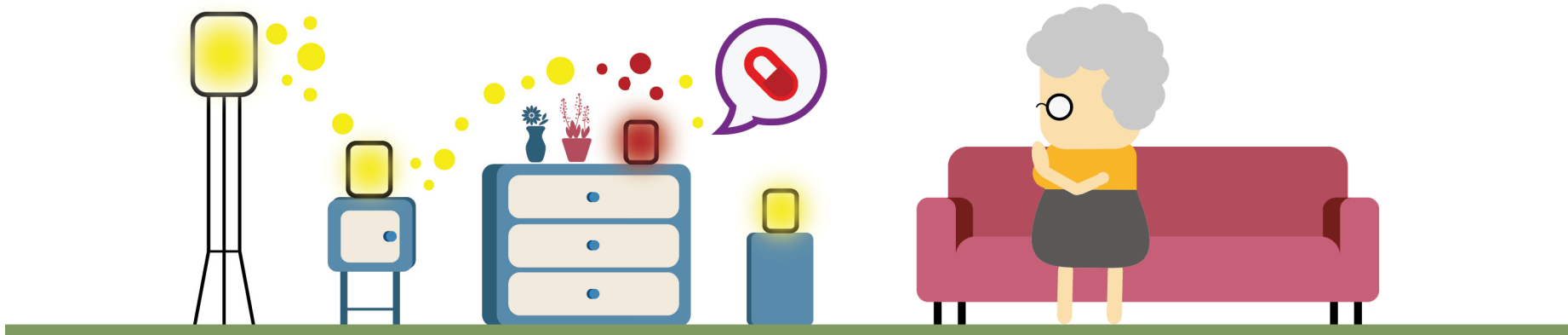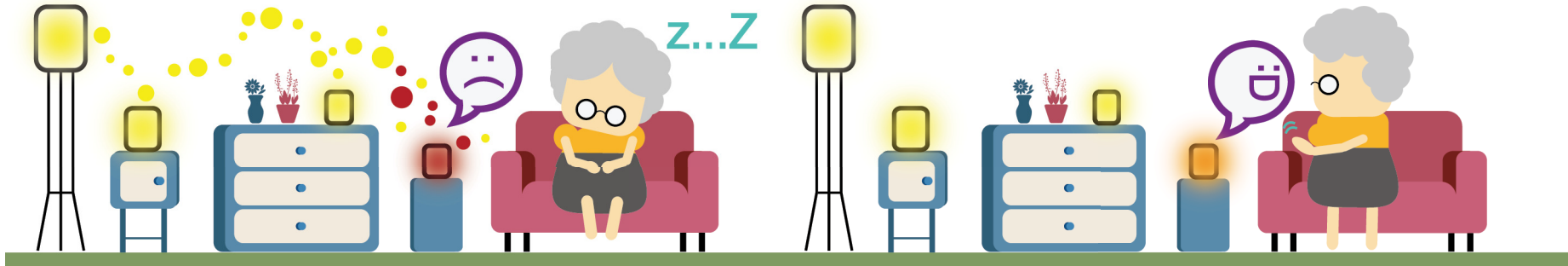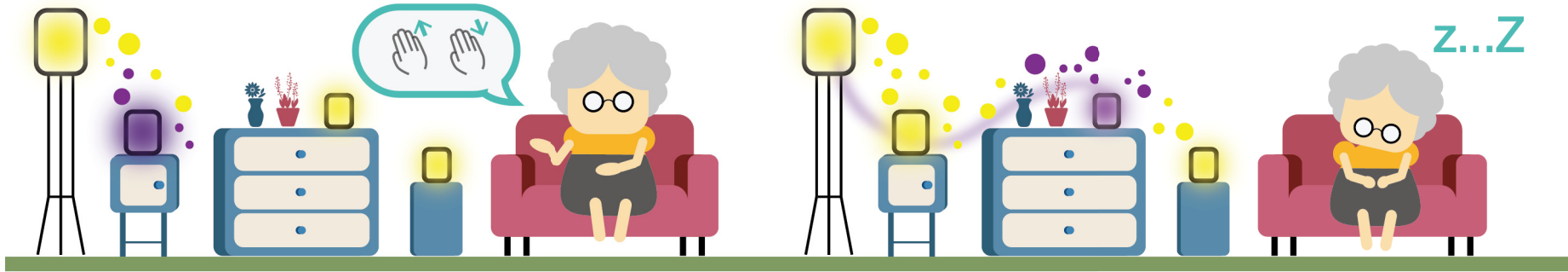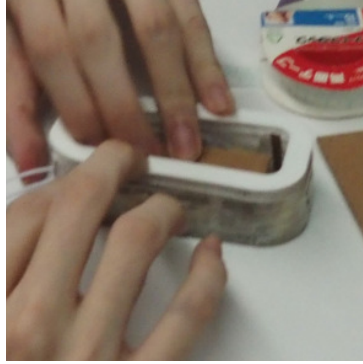
With the defined behaviour in several scenarios the prototyping could start. The major challenge here was to program the Hue lamps as desired. With many iterations of the processing code in the end the desired behaviour was reached. The behaviour of Hinkypunk is inspired on the interaction between pets and humans.

Hinkypunk has a carrying home which the owner can take with him or her whenever he or she is going away. Once they arrive back home Hinkypunk can go back into the entire system of the lighting in the house.

The interaction with the system is through leap motion and can ideally be done with every lamp. Also the carrying container contains a sensor and therefor it is designed in the shape of this sensor. It is made opaque to give it a soft diffuse look and make it more natural and subtle.

The color purple of the natural state of Hinkypunk relates to the philosophy of BenQ where red is the more human color and blue the more technological color. Hinkypunk is designed in this same philosophy with human or animal like behaviour with the possibilities of the technological system.

Why woollen knitting
In the begining, we think the elder always have something old that is full of memories, so we try to find something old as material to build our scenario. However, we didn't find perfect old objects to be the mask of light. What we found cause the color of hinkypunk to become difficult to identify, so we try to consider about old clothes and to unite the style. After a period of time, we think that we can knit masks in woollen to build our scenario which present the image about a grandma who is interesting in making handicrafts make clothes for pets.
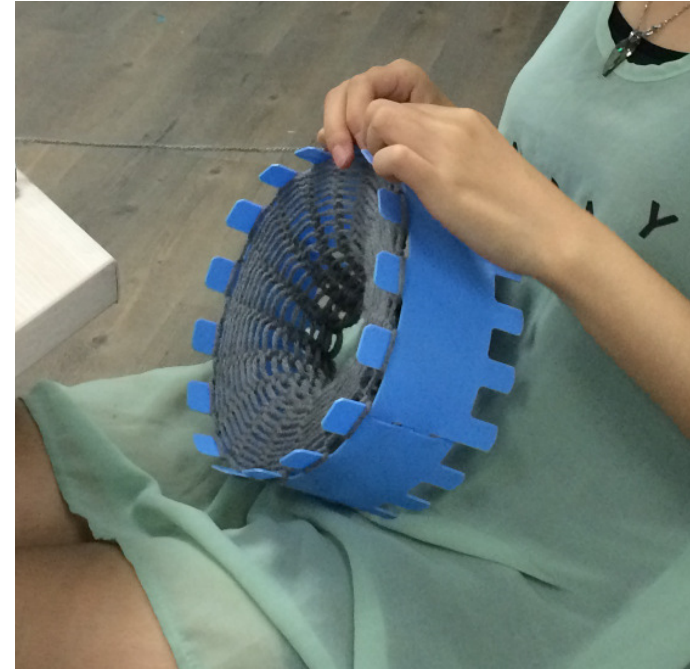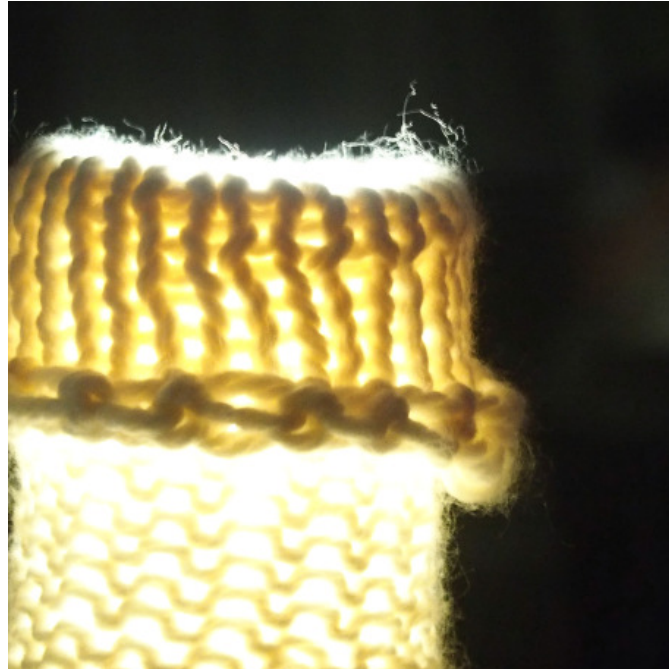
Let elderly make their own space
Each one has there own style, so we think the handmaking is a necessary process to deco-rate their own environment.
In the future, users may could use other materials, like bam-boo, papper, or something with personal memories.
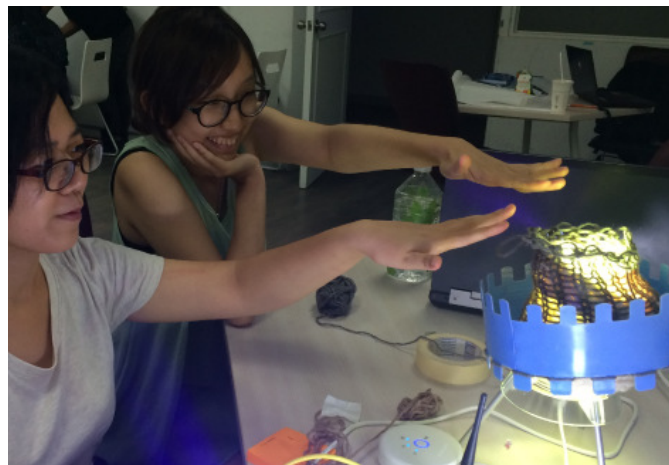
Leap Motion Controller will be installed in every lamp as well as mobile lamp shown in the left side photo.
mobile lamp is equiped not only Leap Motion Controller but also full colour LEDs to show its behavior.

Asian gestures for "come here" and "go away" are chosen to be recognized.
Other than that, tapping and carresing movements are rec ognized.

Moving average of 2 seconds by 20 frames/second is used to summerize the noizy output of the sensor. After the average, mode of the state is used.
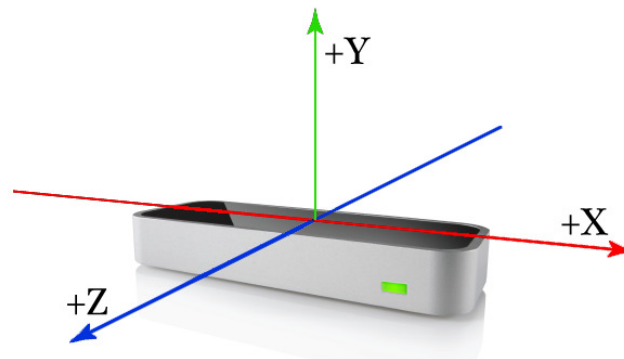
Gesture Recognition
For the interaction with the elderlies in the care home we intended to use one of the most intuitive way of interaction, spontaneous gestures. From our needs of robustbut intelligent and efficient gesture recognition, we have selected Leap Motion Controller in our prototypes.

Gesture on cultural aspects
There are apparent differences in gestures between Europe and Asian countries expressing such non-verbal gestures as, "go away", "come here". Most of the case European will gesture those with their palm upper side and curl arm or wrist upward, in contrast, Asians will palm side down and curl wrist or arm down side. Asians way of the gestures are deliberately chosen in our prototype.

Technical work out in gesture recognition
Although auto coordination feature for front and back switching is installed, to utilize the built in gesture recognition function, consideration for the coordination of the sensor is important, because the recognition area of the sensor need to fit the direction of the users hands.Gesture recognition function is not quite stable and have a lot of noise are also recognized, we installed moving average in computation of the gesture for the reliability of the recognition result.

5 states of gesture recognition
There are 4 states of user gestures are recognized. After the oving average calicuration of 40 frames of noisy sensor output, mode of the average is chosen as a state of the gesture. most of the time there may not have any imput, and the state is called NONE, when user show "go away"gesture, it have GO_AWAY state, in the same way, TAPPING, CARESSING state are implemented.

The name Hinkypunk is in-
spired on marsh lights, or will-
o-wisps. Hinkypunk is a part of
this myth, it is a creature with
a lantern that leads people
through the marshes.

Discussion
This project was done in a week, so there as not much
time to go in to depth on the theory on how to create ani-
mal or human like behaviour in a digital system. However
we used the paper of Eva Deckers about perceptual cross-
ing, which helped in defining an intuitive interaction, this
aspect could be elaborated on further.

Next to that there are a lot more possibilities to create
intelligent behaviour with a system like the Philips Hue.
However due to time limit we could not explore this to a
deeper extend. When this product would be developed fur-
ther it would be recommendable to create a similar system
that enables for programming such intelligent behaviour.

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maximum result.

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