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HoneyPot: Connecting Through a Mediated Ambient Plant

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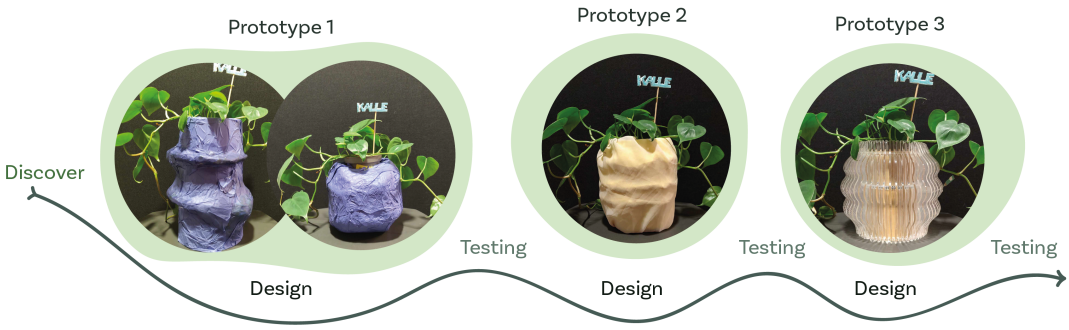

Figure 1: Featuring of the iterative design process and the prototypes created in the different phases.

ABSTRACT

In this paper, we motivate and introduce a novel concept in using a tangible prototype with the intention of creating a new type of relationship between a plant and its owner. The HoneyPot uses ambient light to create a cozy vibe and atmosphere to evoke pleasant emotions as an attempt to reduce isolation issues in adolescent populations. By remotely connecting two pots, users can also stay socially connected to each other despite the physical distances separating them. After explaining our iterative design process and testing of the product, we discuss our results and the findings of four main themes regarding the usage of HoneyPot.

CCS CONCEPTS

• **Human-centered computing** → **Interaction design**.

KEYWORDS

Remote connection, ambient light, prototype

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1 INTRODUCTION

In recent years, social isolation has been identified as one of the main concerns for mental well-being in some communities [6][1][8]. Interactive technologies have been used to mitigate social isolation, and help support individuals by trying to establish social connections between people. Whereas most distance communication is digitally experienced over an ordinary phone or video call, there have been many creative alternatives in HCI that leverage a richer set of tactile qualities mediated tangible prototypes [2, 7]. Examples range from self-build devices at home [3], leveraging a phone's sensors and actuator to communicate embodied cues [5], and communicating affection through wearable devices [4].

One factor that can aggravate social isolation, and also largely impact the well-being of individuals, is lack of light [10][9]; e.g. during the long winter months of the Nordic region. To the best of our knowledge, we have not seen an interactive prototype that builds on the intersection of an ambient light technology and a tangible home object to mediate interaction between individuals remotely.

This has motivated us to utilise an interaction design rapid prototyping process to introduce a novel interactive prototype, the HoneyPot, which aims at connecting people through an ambient plant pot. The main concept is to blend technology with a tangible everyday object like a pot to facilitate a unique form of remote communication and interaction. This allows people to share moments and establish a sense of connection despite being physically apart. Thus, in this paper, our research contributions are (1) the development of a novel prototype that mediates remote connection between individuals, and (2) reporting on design impressions gained from a pilot study. The following sections outline the details of the prototyping phases, and pilot testing.

2 HONEYPOT – PROTOTYPING

An iterative rapid prototyping process that follows the interaction design phases of discover, design, and test was carried out.

Discover phase: to gain knowledge about the target group we conducted short interviews that focused on experience with plant ownership and care. The participants consisted of 21 interaction design students (22 to 30 years old). Their feedback pointed to the way young adults take care of their plants and their relationship with them. Using thematic analysis, it was discovered that positive feedback like visual feedback of growth, the aesthetics the plant brought to a room, and the way they create a feeling of home, was the biggest motivator. They were also motivated by the investment put into buying and taking care of a plant. Naming the plants, having a favourite plant, and knowing that they are living beings also strengthened the emotional bonds to the plants. It was mentioned that the plants contributed to social interactions as a conversation starter or through sharing tips about plant care. Despite the motivating factors, it was discovered that common issues were forgetting to water their plant and not exposing it to enough sunlight.

Design phase: we started by sketching design solutions, where the keywords and main points from the thematic analysis were used. Through a series of sketch sessions and discussions (focusing on features, shapes, colours, and functions), we identified the desired design features for the pot. Thereafter, we realised the two versions of the physical low-fidelity prototype using foamboard, clay and paper, as seen in Prototype 1 of Figure 1.

Using the low-fidelity prototypes, we carried out quick feedback pilot tests, to gain insights about the shapes. We asked six interaction design students (individually) to close their eyes and hold the pot with two hand while describing what they felt. It was found that the participants preferred the weight to be somewhere between the two prototypes. Furthermore, the round shape was believed to be easier and more comfortable to hold than the asymmetrical one because it was more obvious where and how to put your hands. Thereafter, the low-fidelity prototype was refined (see Prototype 2 Figure 1) to include a spherical shape and surrounding asymmetrical “waves” for supporting the fingers when interacting with it. We used foamboard, silk paper, and fabric to give the pot a soft and inviting feel. It was made translucent so that light could shine through it, and the functionality could be tested. Three interaction design students were asked to pilot test the function of the pot lighting up when touching it. We used a Wizard of Oz technique to adjust the light’s intensity. The participants all liked the shape and feel of the pot, although they commented that the fabric might get dirty which was taken into consideration for future improvements. When introducing them to the functionality and idea that the pot should be connected to a friend’s pot, all reactions were positive.

The next step was to refine and improve the functionality of the HoneyPot. Acrylic plastic was introduced to construct three gear-shaped center pieces and 66 wave-shaped edge segments. These were glued together and a thin wooden sheet was put inside to act as a lamp shade. The electronics, which consisted of an arduino, a LED-strip and touch sensors, were put together and attached to the pot. As one of the goals with the pot was to bring feelings of home and connection, an ambient warm light was chosen; see Prototype 3 in Figure 1.

3 PILOT TESTING

The pilot testing consisted of three parts: questionnaire, interaction with the pot, and semi-structured interview, where five participants (one male, 4 female aged 20-30) tested the pot. Questions about plant ownership, relation to plants, and their thoughts about tech in plant care were asked. Each session began with an introduction and signing of consent forms. The participants then interacted with the pot, during which they were asked to use a "think aloud"-method. Finally, a semi-structured interview was conducted focusing on usage of the pot, how their relationship to plants change, and the integration of technology. Notes were taken during the interviews.

Analysis and Results: a thematic analysis was conducted and seven themes were discovered: feelings, aesthetics, usage, social connections, seasonal, touch, and plant care. The four most common themes were: (1) Feelings: the HoneyPot imbued a feeling of coziness and a sense of wonder. Feelings of warmth gave a sense of togetherness because of the ambient light and the social connections. (2) Aesthetics: the pot was perceived as soft and warm, appearance looked modern and cool with nice colour and size. One participant said "I really like the shape of the pot, it’s comforting and not sharp". One exception was that the unfinished aspects like the wires made it look clunky. (3) Plant-connection: the pot showed increased connection with the plant in a fun way, and worked as a reminder to take care of plants. A participant mentioned the risk of excluding plants in regular pots as they would not catch your attention so easily. (4) Social-connection: a way to connect and communicate with far-away individuals. Easy to check availability, accessible over far distance, works as a reminder of the connected part. Timezone differences was mentioned by a participant, who saw HoneyPot as an unobtrusive way to initiate communication.

Desired Future Functions: participants mentioned some features they would like to add, e.g. adding signals such as sound to make it easier to notice and more accessible. Also, if one would be able to connect several pots, colour could help differentiate the connections. The colours could also represent different seasons or be changed to fit one’s decor. Another idea was to make the pot’s light time-dependent on the hours of daylight.

4 CONCLUSION AND FUTURE WORK

This paper presents the process of developing an interactive prototype, exploring how technology can be blended with an everyday object to connect people. Through an iterative design process containing the three phases: discovering, designing, and testing, where the two later were repeated three times, HoneyPot was developed. With a combination of technology and plant care HoneyPot enables remote communication between users and has the intention to enhance the relationship with plants and other users.

Four main themes were discovered from pilot testing the HoneyPot: feelings, aesthetics, plant connection and social connection. Our prototype seem to evoke feelings of warmth and a sense of togetherness at the same time as it was perceived as modern and aesthetically pleasing. Future work will focus on adopting some of the recommendations suggested in the pilot study, e.g. adding customisation options, and investigate the possibility to connect more than two pots. In addition, future directions require carrying out a full evaluation study with different user groups and demographics.

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