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Abstract

We present the design and a prototype implementation of *Get Cozy*, a simple beverage reminder system. The purpose of this project was to explore ways to subtly remind people of a forgotten hot beverage. Based on observations and personal experience, tea is sometimes forgotten about while it steeps or cools. In an attempt to multi-task, individuals often venture off to another room while their tea bag steeps and tea cools. During this process, the individual will often forget about her tea. Inspired by mugs with removable handles and DIY wearables, we designed and prototyped a removable mug cozy that doubles as a bracelet. Here, individuals can easily slip on this cozy and simply go to another room. As the tea cools, it will wirelessly communicate with the cozy by changing the cozy's color. This subtle notification acts a reminder that there is tea in the other room which is slowly cooling.

Keywords

ambient notification, tea, cozy, LED, blinkm, temperature sensor, calm computing, wearables

Introduction

Modern life is punctuated by a constant barrage of information and interruptions. Phone calls, emails, and text messages all compete for our attention. This project is an exploration of ambient notification systems that don't overwhelm the senses.

We decided to focus on the experience of drinking tea, which is a calm, soothing experience that removes one from the information overload of today's world. Based on our own tea drinking experiences, we decided to focus on the practical problem of making tea and subsequently forgetting it on the counter while adjourning to an adjacent room. We were motivated to create a notification system that eliminates the forgetfulness of the user without demanding their attention and breaking them out of their frame of mind.

BACKGROUND

The most common solution to this problem is simply carrying the cup of tea with oneself. However there are numerous situations in which this is inconvenient. For example:

- if the tea is made with a strainer
- if the tea is made with a tea bag that will be removed for flavor or convenience reasons
- if the person wishes to add milk, sugar, or lemon to the tea, all of which are usually kept in the same room where the water is boiled and poured

Another familiar strategy is setting a timer, but there are disadvantages to this approach as well. First, as mentioned above, drinking tea is usually a calm, relaxing experience; timers are a form of notification that demands attention, which runs counter to the goals of this project. Second, an individual may actually forget to set the timer, which is almost always an entirely separate device from anything directly involved in the tea-making process. Lastly, timers imply that there is a specific time when the tea is ready. Our tea drinking experiences tell us that it is not necessarily

about the "right" time, but more about the tea being at an appropriate strength and temperature.

We were influenced by the idea of calm technology, as described by Weiser and Brown in *Designing Calm Technology* (1995). Information technologies are constantly interrupting us; timers and other technological solutions—such as Tweeting or emailing users the status of their tea [2]—increase the amount of distraction. Calm technology, on the other hand, has the potential to present us with information by being both at the center and periphery of our attention, rather than completely dominating it. "The result of calm technology is to put us at home, in a familiar place," [6], which aptly describes the experience of enjoying tea.

DESIGN

Keeping the drawbacks of timers in mind, we strove to maintain the tea drinking experience above all else. We wanted to make sure our design would not interrupt or break up the ritual in an obnoxious way.

We started by exploring the idea of portable tokens. We were inspired by "snap cups" with removable handles [4]. Such a handle could be removed and worn as a ring or bracelet while the tea cools. Handles are already a part of most tea cups, so adapting one for use as a wearable reminder would enable a visually and functionally coherent artifact. However, cup handles must be stiff and sturdy to support the weight of the cup, and these qualities are poorly suited for something to be worn comfortably on the body. In addition, we were inspired by ceramic patterns which change with heat [5]. We envisioned a token that changed color over time with the changing temperature of the tea. An

ideal solution will be as seamless to operate as possible. This means there should be minimal set up and nothing to turn on; the cozy should be activated automatically when hot liquid is poured into the cup. The experience should revolve around the tea, rather than the technology.

We aimed for our solution to fall into the "symbolic sculptural display" classification, described by Pousman and Stasko as "ambient information systems that display very few pieces of information, usually a single element. They represent information in an abstract sculptural way with light, water, or moving objects. They are intended to be decorative objects for a home or office setting and as such are highly aesthetic in their design" [3]. Rather than adorning a room or a desk, our token transforms into a bracelet, serving both an informative and a decorative purpose for its wearer. It displays a single piece of information, temperature, via a representation of colored light, which is integrated into the design.

Although snap handles and color-changing ceramic offered solutions to this problem, they both fell short. The snap handles were too small and clunky and uncomfortable to wear. In addition, we felt that individuals would forget to remove the snap handles since they didn't look obviously removable. The color changing ceramic did not afford a way to notify an individual who was not already within sight of the cup.

Scenario

Ramona wants to make a cup of tea. She goes to her cupboard and pulls out her mug (with cozy attached) and places a tea bag inside. When her kettle whistles, she pours the water into her cup, removes the cozy and

puts it on her wrist. While her tea cools, Ramona returns to her computer to chat with her friends and browse the web. During this time she is largely unaware of the tea cooling on her counter. However, when she glances down at her arm she notices the wristband, which updates her on the temperature of her tea. The mug is wirelessly sending the temperature to her wristband, which is gently fading colors in real-time. She retrieves her mug, reattaches the cozy to keep it warm, and enjoys her tea.

Design Iterations



Figure 1. Design Sketches

After brainstorming and sketching scenarios, we worked with a mug and Sculpy to determine the "natural" ways a token could be removed and slipped on to one's finger, hands, or wrist. This section will outline our physical prototypes.

Extra handle

Using Sculpy, we added a second handle to the mug. During this design process, we envisioned that this second handle could easily snap on to an individual's wrist when he puts his wrist through the mug, much like a slap bracelet.

However, we felt two handles would be confusing in that an individual could easily forget which handle to remove and which handle to leave on. Furthermore, depending on the size of the mug, size of the mug handled, and even the person's wrist, it might be hard for an individual to slip their hands through the handle.



Figure 2. Extra handle prototype

Ring on top of handle

Based on observations, we noticed that one of our thumbs often rested on top of the handle when we held a mug. For this prototype, we placed a ring on top of the handle. When the mug was held, our thumb would slip through the ring.

Although this was easy to slip on and off, we felt the ring was too small and might be easily misplaced or lost.



Figure 3. Ring on top of handle

String around mug.

This solution utilizes a token that glows and attaches to the mug, and around the wrists, with magnetic clasps. The user would pull off the string and wrap it around their wrist. The advantages of this approach are that it's small, unobtrusive, and the magnets make it easily attachable to the mug (as opposed to a button).

While going through this scenario, we felt it was difficult to wrap the string around the wrist. The string was also too thin, making it susceptible to being misplaced.

Material consideration

We considered using thermochromic ink, which changes

color when the temperature changes. However, using this material would require that the object painted with thermochromic inks to remain on the mug, defeating the point of our project.

Final Design

After many rounds of iterations, we alighted on the idea of a tea cozy. Not only does this solution build on an existing artifact, it also provides a material that lends itself well to a wearable reminder. After pouring tea, the cozy can be removed from the cup and slipped onto one's arm before adjourning to another room. Furthermore, once the cozy has been placed back on the cup (or if it is left there the whole time), it continues to reflect the color of the tea while insulating the cup and protecting drinkers' hands.

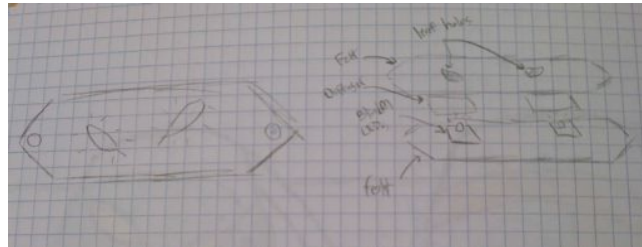


Figure 4. Final Design Sketch

PROTOTYPE IMPLEMENTATION

Our cozy was designed to have leaves that would change colors as the tea cools. Our cozy was made using felt and thread. To have the leaves change colors, we used BlinkM programmable LEDs [1]. To diffuse the light, we used stuffing, which was placed under vellum, which was cut out to look like leaves.

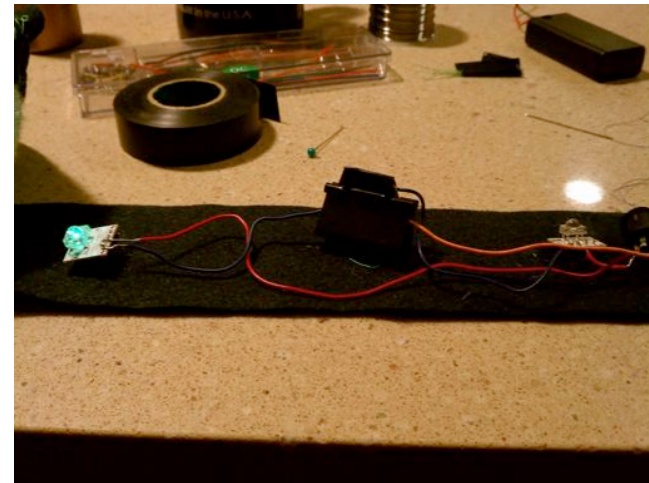


Figure 5. Inside view of the cozy.

The leaves start green and fade to blue as the tea cools. These colors were chosen for three reasons. First, aesthetically the green of the LED fits with the green felt of our cozy's "leaf" design. Second, red is the loudest, highest contrast color of the LED against the green of our bracelet, which makes it too noticeable when first worn. When users initially put the cozy on their wrist, it should fade away from their attention because the tea was just poured, rather than distract them. Red does not achieve this goal. Third, the ending color of blue aesthetically fits with the other colors of our cozy, while naturally indicating coldness. However, this is highly based on the design patterns and colors on the cozy, and may not apply if a different design were used.



Figure 6. Side-view of cozy with vellum leaf.



Figure 7. Front view of cozy with felt leaf.



Figure 8. Cozy with lit leaf.

EVALUATION

Our demo was well received by those who visited our table. Many people who stopped by had experienced the problem of making tea and then forgetting about it. As a result, they understood our prototype and the problem we were trying to solve. In fact, several people had forgotten a cup of tea that very day. Our audience wanted to be able to set their favorite “tea color” for different types of teas. This way, the cozy would serve as a flexible reminder of when to drink teas that require different lengths of time to steep.

Further qualitative evaluation of the prototype could inform future work. For example, we might conduct a post-test study with two groups of individuals. One group would be given the cozy and the other would not. Both groups would keep a journal to document their tea making experiences. Based on the journal, we would evaluate whether or not those who had the tea the tea cozy were less likely to forget their tea. After the evaluation phase, we would conduct interviews asking individuals for feedback regarding the cozy.

FUTURE DIRECTIONS

Our full conception of *Get Cozy* includes a companion

mug along with the cozy. This mug would have a heat sensor and wireless technology to "talk" to the cozy, telling the cozy its temperature. As previously stated in our scenario, the cozy's color would change to reflect the mug's temperature in real time. It was a bit difficult to clasp and unclasp our cozy, so the mechanism should be reconsidered. It would also be worth comparing the affordances of cups without handles.

Further, people who came to our table expressed an interest in being able to set their "tea color" that alerts them when their tea is at the perfect temperature. We feel this could be a good use of our product and worthwhile to explore solutions to this problem.

REFERENCES

[1] BlinkM. <http://thingm.com/products/blinkm>.

[2] Multu, M. and Perman, B. (2010). Twettle. <http://www.mobileinc.co.uk/2010/03/introducing-the-twettle-project-the-kettle-that-tweets/>.

[3] Pousman, Z. & Stasko, J. (2006). "A Taxonomy of Ambient Information Systems: Four Patterns of Design". AVI '06.

[4] Schwab, A. (2006). Snap Cups. <http://www.invaltdesign.com/index.php?/products/snap-cups/>.

[5] Vessel Ideation, Inc. (2009). One tea kettle. <http://www.vesseliteation.com/one.html>.

[6] Weiser, M. and Brown, J.S. (1995). Designing Calm Technology. <http://www.ubiq.com/hypertext/weiser/-calmtech/calmtech.htm>.