Tweeting Halo: Clothing that Tweets

Wai Shan (Florence) Ng, Ehud Sharlin
Interactions Laboratory, Department of Computer Science, University of Calgary
{wsng, ehud}@ucalgary.ca

ABSTRACT
People often like to express their unique personalities, interests, and opinions. This poster explores new ways that allow a user to express her feelings in both physical and virtual settings. With our *Tweeting Halo*, we demonstrate how a wearable lightweight projector can be used for self-expression very much like a hairstyle, makeup or a T-shirt imprint. Our current prototype allows a user to post a message physically above their head and virtually on Twitter at the same time. We also explore simple ways that will allow physical followers of the *Tweeting Halo* user to easily become virtual followers by simply taking a snapshot of her projected tweet with a mobile device such as a camera phone. In this extended abstract we present our current prototype, and the results of a design critique we performed using it.

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INTRODUCTION
Expressing ones personality, feelings, and thoughts is a social activity that people are engaged in continuously both consciously and unconsciously. A person's manner of speaking, her body language, tattoos, and the kind of clothing that she wears are some of the many ways humans show their personalities to the people around them.

The internet provides a new medium that people use to express themselves and share their thoughts. Many people use social networking and microblogging sites such as Twitter to post status updates about themselves. In this way, people's social expression transcends beyond the explicit physical expression, reflecting only on their immediate surroundings (for example, conveyed by speech, body posture, clothing), and scales to an entire online community.

Even though the physical and virtual means of self-expression are quite different, we argue that the social aim is often similar. Therefore we are exploring ways that will integrate both physical and social expression into one seamless medium. We present our *Tweeting Halo* concept, a personal visual halo around the user, projected from an interface which is worn as part of their clothing, that allows her to express herself both physically and virtually. In our current prototype, using a portable projector and an iPod, the user can tweet her thoughts to her followers, and at the same time project her tweets as a textual halo above her head. People who are physically following the user can read the projected tweets, and these physical followers can become virtual followers by simply capturing the QR code projected on the *Tweeting Halo* using a camera phone.

The *Tweeting Halo* ss a form of personal expression, allowing the user to display a message to her physical and online communities, without necessarily expecting a response. Similar to Twitter, using the *Tweeting Halo* can be inappropriate in various settings, where direct communication such as speech would be preferable. However, we see *Tweeting Halo* being added to a variety of implicit personal expressions used by people to socially express themselves and communicate in public.

RELATED WORK
Wearing a portable projector has been explored before (e.g. [1,3]), though the factor that determined the placement of the projector in those studies was how to project onto a surface so that the wearer can see and make direct interactive use of the projection, rather than a public use focus. There are several existing efforts of using a handheld projector in social settings. Cowan et al.[2] suggested that projecting images near a person can become a viable tool for self expression. However, as far as we know this approach was not implemented. *Tweeting Halo* is an attempt to clearly project to observers, not to the wearer (thus our shoulder placement of the projector, to allow projection onto the ceiling). Our *Tweeting Halo* implementation focuses on text as an interactive media, and posting the projected text to Twitter to merge the physical and virtual need to express oneself.

TWEETING HALO PROTOTYPE
Our current *Tweeting Halo* Prototype uses a Microvision SHOWWX Laser Pico Projector connected to an iPod touch through a video cable to project the user's tweets. The laser projector is always in focus and lightweight. Through an iPod app we designed, the user can input a message to upload to Twitter. The tweet then scrolls across the screen and is projected on the ceiling above the user by the projector, which creates a *personal halo*, allowing those near the user to associate the message with her thoughts. In order to integrate the *Tweeting Halo* as part of the user's clothing we designed a shoulder mount which is based on placing the projector into a holder we designed with ShapeBlock, and attaching it to a strap positioned on the shoulder. The iPod is held in a pocket and the cables are hidden underneath the clothes (Figure 1).

The background behind the scrolling message indicates how much time has passed since the message was uploaded. Figure 1 (left) shows the halo when a new message has been posted. The background slowly fades to plain blue by the end of five minutes so physical observers know if the tweet is recent or not.

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The projected screen displays a QR code encoding the tweeter's username in the lower right so physical followers running a QR code reader app on their mobile device such as a camera phone can take a snapshot of the tweet and become the user's virtual Twitter followers (this client app was not implemented yet). By using QR code the physical followers do not need to remember the user's name, or read small text on the projection which may not be clear. By giving people the ability to directly transform physical following to virtual, we attempt to better link the two interactive realms of the *Tweeting Halo*.

Figure 1: A new message posted on the halo with a QR marker at the bottom right corner (right); Wearing the *Tweeting Halo* (left).

EVALUATION AND DISCUSSION

We used the *Tweeting Halo* prototype in several settings and also ran a dedicated design critique session in our lab. The projection's brightness on a ceiling above the user head is too dim in most normal lighting conditions. However, in dim lighting conditions the projected tweets were relatively clear and easily read.

In our design critique, we invited 12 participants into a dim room to look at three art pieces, simulating a gallery. All our participants were interaction designers, members of our research lab. One visitor (the first author) had a *Tweeting Halo* and was continuously tweeting about the art pieces. The other participants were asked to observe the halo, and to later comment on its effectiveness and usage.

We noticed that the projector shone into the user's eyes a little when she turned her head towards the projector. A different placement or adjustment of the orientation of the projector should eliminate this issue.

All of the participants commented that the message on the halo was readable in the (rather ideal) session conditions. They liked the use of the QR code, noting that it is easier to take a snapshot of the code than to type it in manually.

Because the halo was projected on a ceiling about 2m away from the user's shoulder, participants reported that small movements of the projector caused large movement of the projected text, often hindering its readability. Generally, the user had to stand upright to allow the projection plane to remain on the ceiling.

The user may need to position the projector differently, in order to use the *Tweeting Halo* effectively in different settings. For example, a location with a high ceiling, or outdoors where there is no ceiling at all, projecting on a wall or on the floor may be the only viable option. Similarly, if the room is very crowded, it may be difficult to find a space on the wall to project to, so in that case the ceiling space above the user's head would be more ideal.

One participant reflected that perhaps projecting *personal halos* based on images or colours would work better than text, while the others liked using words more.

While the *personal halo* concept seemed to appeal to all participants, some noted that projecting on the ceiling may take away from the one-to-one relationship of user and halo as it may not always be easy to know who the halo belongs to, such as if there were multiple halos in close proximity.

Another concern that was brought up relates to the physical attachments to one's tweets. Knowing that others can pinpoint the user may make the user more wary of what she posts due to social etiquette. Even though tweeters can share their true identity, generally the user is immune to punishment brought about by her comments. However, this immunity disappears as soon as the user enters the physical world, thus the user needs to use caution to post content that is appropriate for particular settings and context.

FUTURE WORK

The current *Tweeting Halo* prototype is designed to project onto the ceiling by placing the projector on the user's shoulder, however, it should not be difficult to mount the *Tweeting Halo* on other body parts or integrate it into other clothing components such as strapped to the pants to project onto the ground.

An important aspect of the *Tweeting Halo* usability improvement would be the enhancement of the projected image stability while the user is on the move. Another important future effort is to enhance the quality of the projected image in various different lighting conditions. Using a more powerful projector may allow it to be useful in more physical setting.

We would like to develop other applications to make use of the more general *personal halo* concept (beyond tweeting), such as a navigational aid, interactive pet "living" in the halo, and exploring other projection planes for the halo.

CONCLUSION

Tweeting Halo provides a new way to convey an individual's thoughts in public using text projected from their clothing. Our *Tweeting Halo* prototype is an attempt to create a new personal expression layer, very much like a hairstyle and clothing. By building into the infrastructure of an existing social network (Twitter) we allow physical followers to read physical tweets, and to become virtual followers by simply taking a snapshot of a projected tweet.

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