

[13], while Collabio encourages people to generate tags for people in a social network [3]. However, the incentive structures of games often shape the choices of users to the game designer’s desired ends, reducing users’ expressiveness and flexibility.

2. KULTAGG: LUDIC TAGGING

Our goal was to design an interface supporting goals of tagging such as description and categorization while including fun and playful elements that motivate people to tag and give them latitude in how they tag. Our design, shown in Figure 2, runs in a web browser using jQuery, backed by a server built on Ruby on Rails. Its main features of interest are two expressive elements: coloring individual tags, and on-image annotation.

Color. Every tag has its own color and a “color handle” (the colored squares in Figure 2). When the page loads, the color handle cycles through colors of the rainbow; a tag’s initial color is set when the user starts typing. Users can also change the color of a tag by clicking on the tag or the color handle, which brings up a standard color palette.

We chose to explore color because it is familiar and naturally associated with photographs. Color also has associations with particular meanings and moods; for example, “orange” associates with “exciting” or “stimulating” [9]. We thought color might encourage people to use tags to convey personal emotion or subjective opinions [10]. Allowing people to apply colors to tags might also support image search tasks that pertain to color.

On-image annotation. Users can place tags directly on an image by clicking anywhere inside the photo, bringing up a textbox and color handle. When the “Add tag” button is pressed, the textbox disappears and the tag remains in place. A drag handle allows a tag to be repositioned, and tags can be deleted by clicking on a circular cross icon. Users can also add tags associated with the image as a whole using the textbox below the image; these tags appear in a list below the picture. Early pilot testing led us to include a copy of each on-image tag in the tag list as well.

As with color, on-image tagging seemed like a natural extension to tagging systems that might support new ways of describing pictures. The on-image tagging, ‘labeling’ metaphor is becoming more familiar through Facebook and Flickr, though in these cases



Figure 2: The kultagg interface. Tags can be added both below the picture in the textbox, or at arbitrary locations on the picture. Users can also change the color of a tag by clicking the colored square, which brings up a color palette.

the tags are focused on people and comments respectively, and the tag displays differ from kultagg’s. Focusing attention on specific aspects of a picture may support not just expressiveness but some cognitive and communicative, while (somewhat like Peekaboom [14]) the on-image annotations might also be useful as training data for object recognition algorithms.

3. EVALUATION

We conducted a ten-person lab study (five female and five male college undergraduates) to understand how people reacted to the color and annotation elements of kultagg. We first showed participants a one-minute video demonstrating the interface, then asked them to tag ten images in any manner they wished. We created two sets of five images spanning a range of styles and themes. We also created two versions of the interface: kultagg itself, and a version with color and on-image annotation removed to reflect a more standard interface. The design was within-subjects; people first tagged a randomly chosen set of images with a randomly chosen version of the interface, then the other set with the other version of the interface. Each set was presented in random order. This allowed us to mitigate learning effects and the effects of specific pictures while encouraging participants to compare the interfaces in terms of the novel features of kultagg.

We asked participants to think aloud as they tagged, and after they completed tagging all the images, we conducted a five to ten minute interview. We asked participants about their prior tagging experience, strategies and motivations for tagging, opinions about the color and on-image annotation, and for general feedback. We used screen and voice recording software to capture each session, extracted significant and interesting quotes, and organized them to address three main research questions:

RQ1. How do people use and interpret color in tagging systems?

RQ2. How does image annotation affect people’s tagging?

RQ3. Is kultagg seen as fun versus other tagging interfaces?

In the quotes, participants in the main study have double-digit numbers, while pilot participants are shown with single digits.

3.1 Color: expression, meaning, and mood

People saw color as potentially useful for both self-expression and for creating and expressing meanings about the image or about the tag vocabulary itself. They also saw it as “a fun little addition” (P16) that “people would enjoy having” (P12). One drew an explicit parallel to using color in other tools:

“And then just for adding personal flair and flavor to it, that could be nice. That’s half the reason that text is able to be...colored in word processing, I see no difference.” (P11)

People often explicitly tried to make tags “reflect the colors that were in the image” (P11)—and had mixed reactions to doing so. One person described choosing matching colors as “some kind of stereotypical impression [he] got” (P16), while another “tried to pick colors similar to those in the image but that was for no particular reason” (P13). Sometimes, color matching was done for aesthetic reasons, as if one was “[putting] together a monochromatic set of photos and...wanted things that [were] all yellow accented” (P11), especially for black and white photos:

“I wanted to be in accordance with the whole picture. I didn’t want to ruin the black and white effect.” (P14)

More subtle uses of color involved choosing colors to “describe feeling, mood” (P18), which people thought “could be [useful], if you’re trying to get at a feeling” (P17) of “the mood or emotion of it” (P15), especially for things like a “person or place [where] it doesn’t matter what color is associated with it” (P17), where color might convey more than one’s color-matching aesthetic. Color choices were often made in accordance with literature on the relationship between colors and emotion [9]:

“I guess I used brighter colors if it makes me think of things that are happier, and I used darker colors when it was seriousness [sic].” (P15)

That is, people assigned meanings to colors that they thought might be useful in interpreting or understanding a picture. Some participants suggested using color as a way to organize photos:

“It would be fantastic if you could tag the dominant color in the photo, when people are looking through a stock photo library where color was an important attribute of the picture itself.” (P19)

Others saw colors as a way to organize the tags themselves, “to categorize their tags, like tag things into groups, [where] maybe one group of people is distinct from another group” (P6), especially “if there’s a photo with a lot of tags” (P7). Some suggested standardizing the use of color, though such rules might contradict the expressive uses described earlier:

“If you had a list of tags, maybe all the blue ones were related to some particular...it would be easy to see what tags had in common. Maybe if there was a universal guideline maybe like what color should be used for what tags it could work well.” (P13)

A few people weren’t sure what color was for: they “didn’t really know how to use it” (P19) or “[didn’t] really see a point in it” (P10). Nevertheless, not everything has to have explicit meaning or utility to be valuable:

“I guess because tagging is a kind of social or fun nature, I don’t know if it’s so useful but there are plenty of things about Facebook that aren’t useful at all.” (P16)

Overall, our participants valued and found color interesting as an element to add to tagging interfaces.

3.2 Annotation: the forest and the trees

People also responded positively to on-image annotation. They said it was “nice to apply, right in this area of the photo a tag” (P19) and “felt restricted when [they] could not tag on the picture” (P17). On-image annotation can call attention to specific aspects of a photo to explain why a tag was applied:

“I like being able to draw attention...to what I’m tagging. If I just like tag ‘happy’ someone else might look at the photo and say ‘I don’t see anything happy...what are you talking about?’ So I think it’s definitely better to tag on a photo to make it clear what specific thing you are tagging.” (P18)

This quote suggests a distinction between tags that label specific elements in a picture, and tags that apply more to the picture as a

whole. A number of people talked about this distinction, and they “think you can be more specific when you can tag on the image” (P17), while for “tags below [you use] mostly for things that applied as a whole” (P19). Overall, people saw value in both modes, for different reasons:

“When I’m not allowed to tag specifically, I think more about the picture as a whole instead of the details of it, and it was an interesting relation. From a practical standpoint I would probably prefer tagging specific parts, but from a more conceptual creative standpoint I would prefer [tagging below].” (P12)

This suggests that on-image annotation may lead to a tension between function and expression. This tension mirrors findings in ArtLinks, where asking people to describe art with tag-like “impressions” negatively affected some people’s holistic experience of the art [4]. Designs should be sensitive to this tension and resolve it based on system and user goals.

Participants also reported that on-image annotation felt more interactive than typical tagging interfaces. A tag below the image “felt more like a caption, and like when you see a newspaper article...that’s not very personal” (P9), while a tag on the image was attractive because “people would always rather touch than look at something and that’s part of [the experience]” (P11). This made people want to use the tagging features:

“Given the option to tag...on the image I would tag more. It’s even a bit more fun; typing below was generic.” (P10)

Not all reactions to on-image annotation were positive. One participant preferred tagging below as he “tagged more quickly and with less censorship of the ideas that were coming out” as he “was just looking for things in a photo and...didn’t have to physically find them with a mouse” (P11). People also wondered what the interface would look like for people using the tags, pointing out that “tags [on an image] are a distraction” (P10), or wondering whether the tags would be collapsed into a list as “[they’re] going to get associated with the whole image anyway”, so “there’s no real point” (P13). But, as with color, participants’ overall reaction was largely positive.

3.3 kultagg: flexible and fun

People compared kultagg to interfaces they were familiar with, most notably Facebook. To tag a photo in Facebook, a user must click “Tag this photo”, and then click on a specific point on the photo, which selects a fixed-size square region and pops up a menu allowing them to “enter any tag”. However, it provides a list of names, strongly implying a norm of identifying people (as might be expected, given Facebook’s focus on relationships). After tagging one or more people, the user then clicks “Done tagging”.

This process takes at least four clicks, which participants found cumbersome because “once you start tagging, then you always have to say ‘done tagging’...I like [kultagg] better, it’s more flexible” (P10). With kultagg, “you didn’t need to click unnecessarily to tag” (P16). They also saw Facebook’s interface as people-centric:

“Facebook is kind of a rigid system, it is predominantly people that you know versus [kultagg], it’s a bit more flexible, a bit

more abstract. There's no indication to what you should be tagging." (P19)

Facebook's interface presents tags below the picture rather than on it. This makes tasks such as people browsing harder because *"not only do you have a big chunk of text you have to find, you have to mouse over all of [the names]"* (P19) in order to see the corresponding people in the picture.

People valued the flexibility of kultagg to go beyond tagging people. They enjoyed *"tagging of objects and funnier tags"* (P6); some felt tagging was *"mostly for personal interaction; humor, if you want to label something simply funny or as a joke"* (P10). This kind of whimsical, interpretative tagging could also lead people to think about others' interpretations and motivations [5]:

"Sometimes people just tag objects in a picture for humor I guess. I think there's a social element to it too, the way that somebody interprets something might be similar to the way you interpret it." (P11)

Both color and on-image annotation supported this kind of fun and *"creativity, [to] make pictures more decorated and more like a scrapbook"* (P12). Participants suggested other playful additions: *"coloring was interesting but I thought different fonts would be cute"* (P14). Overall, people appreciated the kultagg interface and hoped that they would see it deployed for real:

"I think it's pretty neat and I think it's much more flexible than the Facebook thing so...if it were on a mainstream site you'd have more interesting tags." (P19)

4. CONCLUSION

Our results suggest that adding ludic elements to tagging interfaces is a promising idea. In general, people found the idea of color fun, seeing it as a tool for both creating meaning and for self-expression. Though some applications of color were straightforward, like labeling colored areas of an image, it was also imagined as a potential tool for encoding meanings or categories, as well as a way to express moods and emotions. Not everyone saw use in color, but the response was positive overall.

People also valued on-image annotation, finding it easier and more flexible than interfaces they had used in the past and serving a different purpose than tags that apply to an entire image by calling attention to specific aspects of a photo. They described it as a personal, interactive way of tagging an image, more of an embodied or direct-interaction style than a typical interface. On-image annotation wasn't for everyone, and on-image tags may obscure content or lead people to miss the overall meaning of a photo by concentrating on specific aspects.

Still, the response was enthusiastic enough to justify exploring these interface elements in real contexts and studying their effect on readers as well as taggers. More generally, designers should consider whether ludic elements can enhance interfaces for everyday goals, much as Norman argues for the value of emotional design [6]. Is your email client fun? Pleasant? Maybe it should be. Seeing past correspondence with a person you're writing an email to or visualizing the emotional tone of the message you're writing may be both useful and fun.

Ludic designs won't always be appropriate. Playful tagging systems will likely work better in contexts where expressiveness is encouraged and adds value, and not everyone will want a ludic email client. But ludic design can have value, and we hope kultagg is useful as a concrete example of a design where ludic, aesthetic, and task-oriented aspects of the interface work together to support both engagement and everyday activities.

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