

Using media façades to engage social interaction

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ABSTRACT

Media façades in urban spaces offer great potential for new forms of collaborative multi-user interaction. Beyond interaction, they also allow for connecting people and for triggering social interaction between the different users. We report on our experiences of how simultaneous interaction with a media façade at-a-distance can engage social offline interaction between users. We built an application that allows for simultaneous painting on a façade, and gathered informal feedback during the ARS Electronica Festival in Linz, Austria.

Author Keywords

Media façades, interaction techniques, input device, multi-user interaction, social engagement.

ACM Classification Keywords

H5.m. Information interfaces and presentation: Miscellaneous.

General Terms

Design, Human Factors.

INTRODUCTION

More and more media façades can be found in urban landscapes. Their size, visibility, and naturally large audience offer a great potential for collaborative interaction. However, due to their size, interacting with them directly is impossible. Techniques that make use of virtual pointers, however, restrict the number of simultaneous users as each pointer occludes a portion of the façade.

To avoid these issues and to allow multiple users to simultaneously interact with a media façade, we used an absolute and direct technique such as interaction *through live video* on mobile devices [1]. We extended this technique to allow for multiple users by distributing user interface elements on both the façade (*canvas*) and the

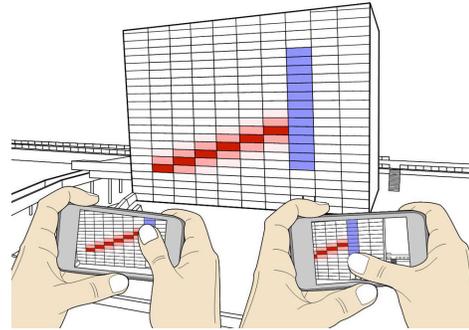


Figure 1: Interacting through live video allows multiple users to manipulate a media façade. Changes (also those of other users) are shown immediately on the façade and the mobile device. Colors denote actions from other users.

mobile device (*tools*) [2]. Based on this, we developed a painting application that allows multiple users to interact simultaneously on a façade. We deployed our prototype at the ARS Electronica Festival in Linz, Austria to observe how people are interacting simultaneously on a façade at-a-distance, as well as how the users interact with each other.

RELATED WORK

Haeusler describes the term “media façades” as the idea of designing or modifying the architecture of buildings using their surfaces as giant public screens [5]. In addition, more and more media façades are embedded in the landscape of cities [7]. Recently, researchers explored the social potential of such media façades: multiple users can view or even design them simultaneously [6]. Dalsgaard et al. described eight key challenges when designing such novel interactive systems [3]. Fischer and Hornecker follow a different approach and analyze the spatial configuration of media façades in relation to the structuring of interaction [4]. They offer a new terminology to describe interactive situations designed for the built environment, including spaces for social interaction among users.

INTERACTION DESIGN

Our goal was to implement a system that allows multiple users to interact simultaneously on a media façade. We decided to use the concept of *Touch Projector* [1] where

users aim their device at the façade and observe it in live video. Touch input on the mobile device is *projected* onto the façade, giving the impression that users directly touch it (see Figure 1).

By utilizing this approach, we also ensure that the users are in front of the façade, since a direct line of sight is required for the interaction. When multiple users interact with a situated public display, a direct line of sight between user and display is also required. The users usually gather around the display, close enough to see each other. For media façades, due to the huge size of the façade and the therefore required viewing distance, it is not necessarily the case that the users can see each other, since they are spread over a certain area.

As described in [2], we built an application that allowed users to paint freely on the façade. During the ARS Electronica Festival in Linz, Austria, we presented our applications to a broad audience. We handed phones with the application already running to users without any further instructions. By observing how others use the application, they immediately started to interact with the façade. Up to three persons were able to interact simultaneously, but we ensured that at least two did at all times. Out of about 50 users, we asked 15 for detailed feedback after interacting with the building.

Collaborative versus competitive use

Regarding painting on the façade, we found that users liked both collaborative and competitive interaction. Whether users interacted in a collaborative or competitive way strongly depended on them knowing each other beforehand. Several users stated that it is fun to disturb drawings of others. This disturbance was generally observed when the respective users did not know each other. Especially when two or three users painted simultaneously, they felt that the unpredictability of the outcome led to an interesting piece of art. One stated: “This is another layer of fun. You can spoil others drawings and you can draw together. So it’s a new way to combine stuff.” Another user stated: “It is really nice when you interact with someone else, you can destroy his drawing which is funny.”

Multi-user interaction at-a-distance

A controversial statement regarding a collaborative use was made by a participant with a background in media design: “Well, it was good and bad, because it is good in a way to interact in a parallel way if you know the person, you are co-working together. But if you don’t know the person, you are kind of fighting over the pixels and over the space to draw and it’s kind of annoying.” This type of interaction mostly occurred when users were unaware of each other, which turned out to be a general problem of interacting at-

a-distance. We observed that in many cases, this also lead to offline interaction by the users. They tried of find out who are the other users by simply observing the audience. In many cases, they either hooked up to collaborate or they started talking afterwards about their experiences while interacting.

CONCLUSION

In this paper, we reported on our experiences with a multi-user application that allows for painting simultaneously on a media façade. Based on this prototype, we gathered informal feedback from a broad audience during the ARS Electronica Festival in Linz, Austria. We observed that when having multiple users interacting simultaneously on a shared canvas (the façade), the users are willing to also interact offline with other users. Starting social interaction with other users is in some cases hindered by the fact that user often are not aware how the other users are. This is due to the fact, that the area in front of a media façade is often fairly large, such that there is not necessarily a line of sight between the particular users. By visualizing the location of the users, we can make them aware of others, simultaneously interacting on the shared canvas, and boost social offline interaction between them.

We believe that we can enrich the workshop with the presented observations and engage a fruitful discussion on how interactive urban screens can be used to trigger social offline interaction between people.

REFERENCES

1. Boring, S., Baur, D., Butz, A., Gustafson, S., Baudisch, P. Touch projector: mobile interaction through video. *CHI 2010*, ACM (2010).
2. Boring, S., Gehring, S., Wiethoff, A., Blöckner, M., Schöning, J., Butz, A. Multi-user interaction on media façades through live video on mobile devices. *CHI’11*, ACM (2011).
3. Dalsgaard, P., Halskov, K. Designing Urban Media Façades: Cases and Challenges. *CHI’10*, ACM (2010).
4. Fischer, P., Hornecker, E. Urban HCI: Spatial Aspects in the Design of Shared Encounters for Media Façades. *CHI’12*, ACM (2012).
5. Haeusler M.H. Media Façades: History, Technology, Content. *Avedition*, Ludwigsburg, 2009.
6. Schoch, O. My Building is my Display, *Proc. eCAADe ’06*, 2006.
7. Seitinger, S., Perry, D.S., Mitchell, W.J., Urban Pixels: Painting the City with Light. *CHI 2009*. ACM (2009).