Public Displays and Media-Spaces

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Abstract
In this paper we discuss our experiences with public displays and media-spaces. We start with an overview of our prior work on public displays and then proceed to our recent work on media-spaces. We present Communiplay, a public display media space. People passing by see their own contour mirrored on a public display and can start to play with virtual objects. At the same time, they see others playing at remote displays within the same virtual space. We are interested whether people would use such a public display media space, and if so, how and why. We evaluate Communiplay in a field study in six connected locations and find a remote Honeypot effect, i.e. people interacting at one location attract people at other locations. The conversion rate (percentage of passers-by starting to interact) rises by +136% when people see others playing at remote locations. We also provide the first quantification of the real Honeypot effect (in our case it raised the conversion rate by +604% when people see others playing at the same location). We conclude that the integration of public displays and a media spaces is a promising research direction for public displays.

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Public Displays; Media Space; In-the-Wild Study

ACM Classification Keywords
H.5.m. [Information Interfaces and Presentation (e.g. HCI)]: Miscellaneous

Public Displays
In this paper we want to explain our interests and prior work in public displays and how we came to investigate the combination of media-spaces with public displays. The behavior of people around public displays has been one of our long-standing interests. For example, we have previously investigated how people interact around non-flat shaped public displays [2, 8]. We found that the form factor of displays can have a huge impact on user behavior around the displays. We have also discussed that behavior in public spaces is strongly influenced by how people want to present themselves towards others, making public spaces a stage in Goffman's sense [4], and how displays can be used for use cases such as advertising [1]. We have investigated how mid-air gestures can be effectively taught to passing-by users and found that a dedicated screen area with a textual hint pulsing towards the user is most effective [10]. We also developed a model for the perception area of public displays based on the architectural concept of isovist [7].

Recently, we have started to move on from our basic observations of low-level human behavior and investigation of low-level interface aspects towards applications for public displays. For example, we have investigated how public displays can be leveraged to support citizen participation [9].

In this project we take different angle on interaction in space: that of connecting remote locations through media spaces and observing how this connection changes behavior of users in space. While we have already made numerous observations about people's social behavior in front of the same public display at a single location, we were interested which of these findings translate to social interaction in public media-spaces, when people only interact with each other remotely. This project brings together the research areas of public displays, playful interaction and media spaces. As the lack of usage is one of the major problems for public displays, we want to investigate whether the connection of multiple displays into a media space can alleviate this problem. Furthermore, media space research has mostly focused on work-oriented communication [6] but we also know that art and game-driven media spaces have been successfully used [3], but less researched, to gain attraction in public settings.

Communiplay
To explore these ideas further we designed a public display media space, Communiplay [5], where people can see their own contour mirrored on a public display and can play with virtual objects. At the same time, they see others playing at remote displays illustrated by color-coded silhouettes (see 1).

Figure 1: In the Communiplay system, screens were connected in a public display media space. People could play with virtual objects, and people playing at one location could play with people at other locations. When people were playing at remote location, this often attracted people to look at and play with the screens (the remote Honeypot effect raises the conversion rate by +136%).

We conducted a public deployment of Communiplay done in August 2013, where we study the following three research questions. The first question we address is how people will use and interact with a playful public display media space. We are interested in when and how people would use such a public display media space, and if so, why. The second question is whether there is a Honeypot effect, how strong it is, and if this Honeypot effect also works remotely, i.e. does the ability to observe people interacting with a screen at a different location entice people passing by to start interaction? The third research question is how different configurations and arrangements of the systems affect the use of the system, i.e. does different representation of the remote location have an impact on the interactions? From our field study we could make a number of interesting observations.

We can show a clear case of both a local and remote Honeypot effect. Observing people interacting at a different location increases the conversion rate, i.e. proportion of passers-by who take action to go beyond a casual look, by 136%. Playing back recordings of people who have interacted before is significantly weaker, and only increases the conversion rate by 38%. The local Honeypot effect increases the conversion rate by 604%.

We also found a significant effect of the number of local and remote users on conversion rate and interaction duration. We also found significant differences of interaction duration and conversion rate across locations.

We were able to observe a multitude of interactions where people were waving, peeking and poking each other through the silhouettes. We also noted that for the short glances that Communiplay offers to passers-by it was hard to fully understand that the silhouettes on screen represented others playing at remote displays. Using different backdrops that showed the remote location or adding a location label on the silhouettes had no significant effect. Moreover, being able to see screens in different places lead to habits over time to play more regularly and show and talk about the system with friends.

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