MyPosition: A Public Polling Projection Display Designed to Spark Civic Participation

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ABSTRACT
We present *MyPosition*, a public, interactive polling projection that facilitates in-situ voting and comparison of the opinion data of citizens. Passers-by can see other peoples' opinion on relevant local topics on a large public screen and can directly participate in real-time using body gestures.

Categories and Subject Descriptors
H.5.m. Information Interfaces and Presentation (e.g. HCI): Miscellaneous

Keywords
Keywords are your own designated keywords.

1. INTRODUCTION
Digital displays are becoming increasingly ubiquitous in public space [2,3,4], showing up in bus stops, community centers, or museums. As display technology is rapidly maturing, it is likely that this trend will accelerate, so that people will become more accustomed to this type of situated media. Although the majority of currently existing urban displays serve mainly civic, commercial, artistic or entertainment purposes, the visual presence and opportunistic accessibility of urban displays might offer a promising communication platform for citizens, such as for increasing public participation and discussion on socially and locally relevant topics.

2. MYPOSITION
With *MyPosition* we present a novel tool to spark civic participation in public spaces. The system consists of a large projection showing poll results to current and locally discussed topics. Passers-by can participate and influence the results in real-time using body gestures.

Figure 1: Screen Capture of the System

While each individual vote is displayed on the screen, different opinions are spatially separated. The overall screen area is divided in different sub areas, while each sub area represents its own opinion. (e.g.: "agree" to a given topic on the right side, and "disagree" on the left side, Figure 2).

2.1 Location and Situation
We install *MyPosition* in public places such as community centers, shopping windows and cafeterias to directly discuss relevant topics for local communities (Figure 2).

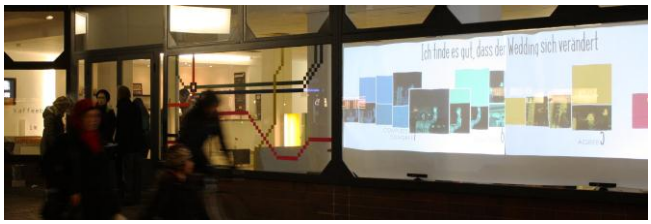

Figure 2: The polling visualization projected towards the street.

2.2 Implementation
The system is designed to be deployed using a series of short-throw projectors and a large rear projection screen. For user tracking and gesture recognition, a Kinect depth camera is used. For rendering the contents we use the processing[1] library for java.

The system scales flexibly to different conditions. For a basic setup with two possible options (opinions) and limited space, the system can be deployed using only one computer, one Kinect and one projector. Each screen / Kinect is driven by an individual program instance. Limited by the number of USB host controllers and graphical output ports, one computer can host multiple instances in parallel. For large scale installations with lots of different possible options, the system can be distributed to multiple computers.

[1] http://processing.org/

2.3 Visualization

Each person's vote is represented as a unique *tile* in the overview (Figure 1).

Figure 3: Vote Representations (l.t.r.: color, contour, image)

2.3.1 Vote Representation

We implemented three different degrees of personalization to represent the votes that are submitted: *color*, *contour*, and *image* (Figure 3).

- **Color mode**: (low personalization), all tiles look identical; making it impossible to reproduce which vote was submitted by whom.
- **Contour mode**: each tile contains a graphical contour of the corresponding person that placed that vote. While it is difficult to identify other voters from their contours, the people themselves have the ability to recognize their own votes.
- **Image mode**: (high personalization) each tile shows a still video image of the corresponding voter. Any passer-by is able to identify voters in the overview.

2.4 Interaction

From the perspective of passers-by, the display is perceived in three different stages: *ambient display*, *implicit interaction* and *direct interaction* stage [1]. While approaching the screen, people transition between these three stages.

Figure 4: User placing a vote

When no person is sensed in the interaction zone, the display is in the ambient stage, showing a static overview of the topic of discussion together with a graphical overview of all previously placed votes.

As a passer-by enters the interaction zone, the system detects their three-dimensional position in space and switches to the implicit interaction stage. In this stage, the passers-by are represented on the display as a large tile containing a real-time mirroring video image, to which a Polaroid-like filter is applied. In addition, tiles that are in the direct proximity of the video image of the passer-by enlarge in a smoothly animated way. The relative position of the passer-by – and thus the implied opinion – becomes previewed on the display, in addition to the corresponding opinion expressed in a textual form. A small hint explains how to place a vote (Figure 3): "Raise your hand to …".

Passers-by are able to submit one vote by consciously positioning themselves in front of the display at a desired opinion, and raise their hand. This gesture is commonly used to visibly express opinions. As the system detects the gesture, it transitions from an implicit to direct interaction stage. After the vote is registered, a visual acknowledgement is shown by way of the video image preview tile merging with the collection of tiles that already correspond to the opinion.

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