
A Doodled “Us”: A Design Case Study On Urban Collaborative Art With Arduino

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Abstract

Social awareness plays an important role in maintaining human well-being. Researchers from various domains, e.g. art and human computer interaction, have spent years studying how to enhance social awareness from different perspectives. In this paper, we report on a design concept of collaborative doodling on public displays by urban residents. We apply the art philosophy of increasing emotional resonance through visual representations with the pervasive nature of mobile technology to promote social awareness among residents in urban areas.

Author Keywords

Art; Collaboration; Design Case Study; Social Awareness; Societal Changes.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

In urban areas, it is more difficult to be aware of each other's existence and it is easier to lose the sense of community, which frequently present in smaller towns [3]. We acknowledge that social awareness is one of the most important indicators of human well-being [9], however, attaining and maintaining this awareness is a kind of *wicked problem* [8] that needs voices from different perspectives. Civic art has historically acted as a creative, innovative and reflective practice, which facilitates societal changes [10]. Meanwhile, information technology has shown a number of possibilities in solving socially *wicked problems* [2][5][6]. Various studies in Human Computer Interaction (HCI) have uncovered how technology is helping promote social well-being from diverse angles [1][7]. Currently, studies about art and HCI in terms of promoting social changes are developed separately. However, there are a dearth of projects aimed at integrating the fields of art and HCI in regards to facilitating societal impact, creative thinking, and ambient existence. In this paper, we examine a design case of collaborative art in urban areas, and showcase how a particular application of art philosophy that increases emotional resonance by visual representations in HCI can increase social awareness and thus promote social well-being.

Design Case Study

The design case is a course project for an advanced prototyping class in the HCI/d program at Indiana University in 2012 [4]. Our first author was a key member of the 4-person design team. The goal of this project is to help increase social awareness among urban residents through collaborative mobile doodling.

The design prototype uses Arduino and Processing to simulate mobile interactions.

Problem Space

The vast artificial creations in urban areas such as complex constructed infrastructures separate residents [3]. This lack of connection and the absence of community is a major factor that leads to many social issues, and is exacerbated by limited avenues for day-to-day interaction [9]. Information technologies help us connect in both micro and macro scopes. But does technology enable us to share emotions and feelings beyond a "like" on Facebook in an intuitive and enjoyable way? Can we get to know more about the people living in the same city through subtle but affective ways? Inspirations from art gave us a positive answer. Visual representations seen in artwork arouse emotional resonance. When viewers try to interpret the abstract information artists attach to visual representations, they are connected with the artists through the work. So can we use a cross-disciplinary approach to endow the power of spiritual resonance in art practices into technology and increase social awareness?

Design Concept

In order to answer the above questions, the student team came up with a concept of collaborative art. The concept has two parts: a mobile application, which provides an interface for doodling and a public display screen. The mobile application enables people to doodle their moods on their mobile devices by picking a color and clicking on device screens. Clicking will trigger simulated firework animations of the selected color on the device screens, which are subsequently projected onto large public displays that are in public space, e.g.

commercial plaza. Users' locations decide the places of the fireworks on the canvas. Multiple fireworks generated every 24 hours create a daily city-mood artwork. Users can "speak" their moods out whenever they want and wherever mobile network is available. All the drawings generated by residents around the city are documented in the same mobile application as collaborative art archives. This enables people who remotely doodle their moods but cannot physically be near the public displays to view it, to download and even print drawings out as art collections. In order to prototype this concept, the team used Arduino and Processing to simulate the mobile interactions, and project colors onto a 3*3 screen wall (standing for public displays) (see Figure 1). We had a total of 30 users participating in the test and demo show. Since our focus here is to analyze how this design case tackles the question of how the combination of art and technology can increase social awareness in urban life and promote social well-being, we will not detail the design process.



Figure 1. Simulations of mobile interactions and urban display.

Subjective Doodling And Objective Drawing

In this project, we did not define the mapping between colors and moods. While the subjective nature of the color selection precludes the project's use as a

communal emotional barometer, this project aims to be reflective rather than representative.

It does not matter whether blue stands for sad or peaceful, what does matter is the process that residents "speak" their moods out in a public space and see how their feelings merge with the others, and how their diverse subjectivities come into a magic result. The tacit resonance when people see the diverse and collaborative fireworks is intended to heighten residents' awareness of how many others are making their subjectivities visible, where the other actions take place, and how their moods merge and become into something fun and aesthetic (see Figure 2). The idea of fireworks blooming in public displays is to enhance this experience, which cannot be measured by quantitative metrics, but can support a reflection on the social intimacy among themselves and a number of others. One of the participants said: "... this is fun, interactive and engaging, ... I will pay attention if people are trying to say something (through doodling) to the screen in Times Square. ... That would be exciting."

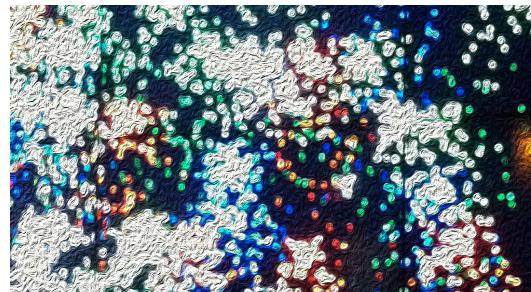


Figure 2. An example of daily-mood drawing.

Conclusion

In this paper, we briefly describe one design case study about how collaborative art through technology increases social awareness in urban areas. The points we want to reinforce here are: 1) social well-being is a critical issue which requires more voices from different perspectives; 2) art and information technology have their own approaches and strengths to promote societal changes; 3) information technologies such as interaction design, ubiquitous computing and social computing can be used in conjunction with socially engaged and collaborative art practices; and 4) such a combination can promote social well-being through increasing social awareness in urban areas.

We hope this design case study can inspire more design and research projects in the future, which will stimulate innovations of socially engaged art practices and reflections on how such practices can promote societal changes.

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