
Bringing Performance Art into Everyday Life Situations

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Abstract

This position paper presents the concept of a tangible and modular interconnected “platform” for interactive digital artworks in everyday environments. Furthermore it presents a proposal for the study of human-human interaction through the use of digital systems embedded in these platforms. Finally a particular realization of this concept is proposed and discussed: A modular interconnected sensor system that mediates team based physical exercises in a fitness or rehabilitation training situation.

Author Keywords

Collaborative interfaces; interaction design; user studies; media art; exergaming; performance; improvisation; co-expression; social learning.

ACM Classification Keywords

C.4 [Performance of systems] *Design studies*, D.2.2 [Design Tools and Techniques] *User interfaces*, D.2.10 [Design] *Methodologies*, H.1.2 [User/Machine Systems] *Human factors*, H.5.2 [User Interfaces] *User centered design*, I.3.6 [Methodology and Techniques] *Interaction techniques*, I.5.2 [Design Methodology] *Classifier design and evaluation*.

General Terms

Human Factors, Measurement, Experimentation.

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http://www.cs.tut.fi/ihte/EIPS_workshop_CHI13/papers.shtml

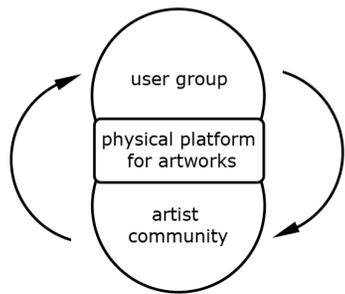


Figure 1. A physical platform for digital artworks. The physical platform works like a “gallery” for digital artworks in that it facilitates tangible interaction with different kinds of media.

The user group consists of a varying group of people, who are present in the local environment around the physical platform.

The artist community can be global. The physical platform is documented online. The users’ interaction experiences with the physical platform and digital works are evaluated, and new artworks can be created and downloaded into the platform.

Introduction

What if interactive art could be enjoyed through group performance situations done by “laymen” in everyday life situations?

Then perhaps some of the challenges with interactive art in museums and galleries could be addressed. For example it can be difficult to create “deep” interaction experiences in exhibition contexts. By deep is meant a) an interaction experience that lasts more than a couple of minutes and involves the user on a different level than the level of a “visitor”, b) a continuous play with the interactive medium where several phases of interaction are entered in one interaction session, c) a chance to revisit the interaction experience and perhaps enter it from a different angle, d) a chance to master the forms of expression that the interaction offers, so that collaboration about interaction and expression is possible.

The aim of the present concept (see figure 1) has been to present a possibility to study long-term and reoccurring interaction with digital artworks in public and semi-public spaces. A sub-aim has been to move focus from human-computer interaction to the human-human interaction that happens through the use of a computer system, where the tangible-digital medium is a facilitator and mediator of an array of socio-aesthetic relationships. Examples of approaches to how this can happen can be found in [4, 6, 10, 20]. Some of the works described transcend the exhibition context in that a) they offer long-term interaction and playfulness, b) they are platforms for new possible interactive artworks and compositions, and c) they provide users with the kinds of physical affordances that allow for

interpersonal interaction through a tangible-digital and spatially (socially) distributed interface.

This position paper draws a distinction between the physical part(s) of the artwork as the tangible “platform” and the many different digital interactive artworks that can be installed temporarily in this physical platform. This paper opens up for the idea that there can be a consistent user group around the physical/tangible parts, and an artist community that continuously provides new works (and new forms of interaction) that can “inhabit” the physical element(s). Figure 1 shows how there can be a continuous flow of digital artworks that are downloaded and installed in the physical platform. The flow of artworks becomes an iterative design process that is shared by the artist-, developer-, composer- and designer community.

With the need for digital-tangible interfaces that are as solid as playground equipment, street furniture or consumer products, this distinction may help to develop designs of interactive art as “consumer products” that leave the one-of-a-kind prototype culture behind [12]. This will of course question the originality of the artwork, nonetheless make the physical component of the artworks less fragile and more available in different everyday contexts and environments. In addition to this artists must be ready to share a physical interface and perhaps develop it together over time. Already now designers and artists share the open source communities of the Arduino, the Lilypad and Littlebits [1, 14, 15].

But why would the “digital inhabitant” - the interactive software system - be seen as an artwork when considering the fact that it has the status of a computer

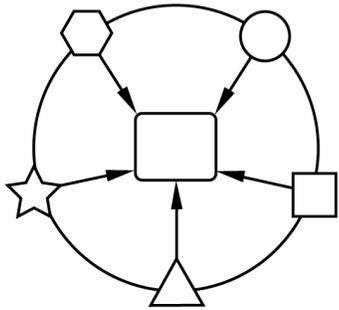


Figure 2. A model of a tangible modular interactive system. The system consists of physical and digital interface components.

The central box with the curved edges is a computer that contains a digital interface application.

The differently shaped objects represent wireless physical interface modules that send interaction data to the central computer.

The big circle: Finally the central computer sends sonic, visual and possibly haptic feedback out into the surrounding space via speakers, projection surfaces, and actuators in the modules.

game that can be downloaded into something that may seem like a commercial game system? A hypothesis is that the aesthetics of the physical component(s) and interactive experience differ from typical game experiences in that they offer possibilities of exploration and expression. The process of interacting with such an interface could be an iterative process where the user(s) continuously move(s) between explorations and performance. An example of such a digital interface could be Björk's album *Biophilia*, released in 2011 in the form of an app [3]. Other examples of interactive artworks that inhabit a device would be the music compositions for team performance described in [16, 18].

The Fitness Art Performance Concept

In the following there will be a presentation of proposal for a very specific realization of the present concept. The proposed realization consists of a wireless interconnected modular sensor system that can be attached to training equipment in the semi-public environment of a fitness- or rehabilitation center (please see figure 2 for more detail). The software applications embedded in this system can, if developed according to specific group training sessions, contain the following design opportunities and research:

1) *The interface*: It can be a platform for interactive sound and visual compositions that can play out in the social context of fitness or rehabilitation training sessions. When artworks are downloaded into the relatively neutral interface parts they become social objects that stimulate particular forms of user interactions [12].

2) *The users*: Through mediation of simultaneous physical movements and group dynamics, it may be possible to encourage users to find and learn accuracy of movement and rhythm, as well as physio-social communication, improvisation and team spirit. Users take in the role as creators of expression - the training is internally directed and socially coordinated (see figure 4). Methods used in embodied music cognition, [9, 11, 13] and conversation and interaction analysis [8, 17, 19] can be used to get an understanding of the physical and social learning that may happen in such scenarios.

3) *The training culture*: The modular system can provide physiotherapists and fitness trainers with a new tool to obtain focus and concentration in the training situation. A hypothesis is that the goal of aesthetic expression in a social atmosphere makes efficient training possible.

4) *The user community*: If the modular system was available to individual users as a series of affordable and networked physical components, then user teams could meet and perform together through the use of a particular interactive artwork or composition.

5) *The artist community*: If a set of basic example training programs and their corresponding logged interaction data was documented online, different artists, designers and composers could create interactive artworks that facilitate the series of movements required in particular training sessions as well as new forms of expressiveness that require physical effort.



Figure 3. An example sketch of a piece of training equipment with a module attached. The module has a battery, a radio sender and receiver, an accelerometer, a gyroscope, switches, an actuator and LED lights. In this case a bend sensor is attached to the module.

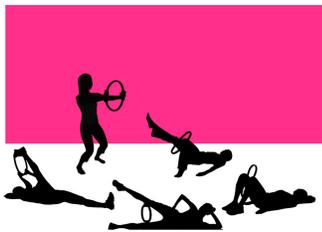


Figure 4. An interaction scenario. A "quintet" plays the Pilates rings as if they were musical instruments. A projection and speakers mediate physical effort.

The Interface Platform

The interface platform consists of identical wireless interconnected modules. Each module can send interaction data, and receives control data for LED lights and actuators embedded in the module (see figure 3). Magnetic connectors make the sensor modules flexible [15]: Multiple sensors can be attached/detached from the sensor modules during one single training session. Two buttons allow users to switch between the feedback modes that correspond to a particular training instrument-sensor combination.

Visual, sonic and haptic mediation of physical effort can be used in different combinations and scenarios. Sound feedback that is available to users in all training positions could mediate physical movements, while visual feedback could be used to create a special aesthetic atmosphere [5], or for game oriented action. Haptic feedback could indicate individual training accuracy, and possibly an aspect of the current shared condition in the training situation.

A Discussion of Fitness Performance Art

The implementation of artworks in for example fitness training equipment allows the artwork to be distributed in the city landscape and co-exist with an activity that people do on an everyday basis - the artworks become part of everyday popular culture and form a new kind of "folk art" that is available to everyone in their different local communities.

Because the artworks are available to be performed in the so-called "mundane" environments, there is no distinction between "artists" and "spectators". Instead the idea of the "artist" is distributed into two different roles: a) the creator of the interactive works becomes a

facilitator of specific artistic experiences, while b) the people who experience the artworks become active performers through the roles they take in, when they engage through their physical performance and social commitment.

The fitness scenario contains elements of folk art, where a tradition allows everyone to create and share the artwork through their active participation [2]. In a sense, a whole new set of public performance traditions could be implemented via the digital artworks that are downloaded into the art platforms.

While the fitness scenario may not be a very innovative scenario in terms of a "platform for art", it has been used as an example, because it supports a commercial movement that is already "in fashion" - something that people are familiar with. A hypothesis that can be discussed and tested is how the level of familiarity a) makes people readily understand and engage with the interaction possibilities, and b) makes it possible for companies to engage in the creation of platform elements, because they see a commercial interest.

However, this kind of standardization of the artistic research practice may not necessarily be a good idea, because we may end up with something conceptually analogous to the idea of the "museum" and "exhibition space". Perhaps there is a price to pay when possibilities for expression and user experience are reduced to for example fitness equipment?

Several experiments with art as "use objects" in everyday environments need to be done in order to investigate the balance between the contribution of the art facilitators and the art performers (the users). Both are - after a while - partners in the development of a shared artwork, and designers, artists and composers can learn from the way people naturally express themselves in a social environment.

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