

# Classic Art for Modern People

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**Abstract:** This poster presents the usage of Ambient Intelligence for enriching the traditional functions of art. A number are presented depicting the potential usage of art for education, learning and generally for improving the quality of our lives.

**Keywords:** Art, Informative Art, Ambient intelligence.

## 1 Introduction

Art is the process or product of deliberately arranging elements in a way that appeals to the senses or emotions. It encompasses a diverse range of human activities, creations, and modes of expression, including music and literature. According to [1], art has non-motivated purposes which are integral to being human, and motivated ones which are intentional, conscious actions on the part of the artists or creator. In this context, this work aims at enriching these traditional functions of art with the ones stemming from the emerging role of art in the context of Ambient Intelligence arguing that potential benefits can be gained in the perception and usage of art in our everyday life activities.

## 2 Background & Related Work

Informative art is computer augmented, or amplified, works of art that not only are aesthetical objects but also information displays, in as much as they dynamically reflect information about their environment [2]. The presentation of art has been used as a means of visualizing information by altering its appearance. For example, the Andy Warhol's paintings of Campbell soup cans has been employed for visualizing a count-down clock or "egg-timer" [3]. In the same context, InfoCanvas is a personalized peripheral display where the user can select the information to be visualized via a web-based interface and

map it to a pictorial representation on the display [4]. Unlike ambient information visualization, informative art moves ahead into investigating the aesthetics of the visualization metaphors. This concept was applied to the domain of dynamic paintings following several different approaches, such as (a) employing visualization techniques to convey data to imagery [5], (b) creating dynamic compositions by adding predefined items on a canvas using predefined criteria and then altering their characteristics based on related data values [5], (c) mimicking the style of famous painters in order to create novel paintings that have similar visual characteristics [6] and (d) mapping specific information semantics to some parts or characteristics of an existing painting [7].

### **3 Architectural Space and Setup**

The Informative Art applications presented in this poster have been installed in the Ami Sandbox laboratory space of FORTH-ICS. In this space, various AmI technologies and applications are being developed, integrated and demonstrated. This research work uses from the aforementioned infrastructure (a) a surround speaker system with 8 speakers (for special effects and system output), (b) computer-operated lights for providing an ambient lighting experience, (c) a touch screen for selecting the settings to be applied on the room, (d) two high definition TVs with distance sensors used as art displays, (e) one large front projection screen created by 2 ceiling-mounted projectors used for presenting art related information and (f) one touch enabled back projection screen for interactive learning.

### **4 Interactive Applications**

This section presents the applications deployed in the aforementioned infrastructure for allowing the usage of art in every day environments. More specifically there are two primary displays (TV screens) in the room acting as ambient information displays. These screens present either artworks in a random fashion, or artworks that incorporate valuable information for the user. In either way the room lighting is adjusted according to the predominant color of each presented painting. On the other hand, the two projector screens are used to present information of the artist responsible for creating an artwork the artwork itself and furthermore, if requested by the user, the specific information depicted by each informative art display. At the same time users can manipulate the touch enabled back projection screen to access the timeline of the artist in terms of its life achievements and work. The coordination of activities (which screen presents what, what kind of output is provided, what kind of information is presented, etc.) is performed through the touch screen display residing on the room's entrance.

#### **4.1 Art Transforms the Space: Ambient Lighting**

Little work has been directed towards setting the mood of people and thus transforming the leaving environment to a pleasant environment. In this context, art can be employed to transform space to achieve the creation of a unique visual and sensory environment. Different colors can produce different emotions and can be used for different purposes [8]. An ambient light service running in stealth mode calculates the predominant color of each painting and adjusts the room's lighting using the calculated color.

#### **4.2 Information Displays**

As already presented the two informative art displays available on the room are used to present a number of different types of information. Mailbox information is presented by employing the concept of informative art together with mailbox monitoring. The Informative art display initially presents an abstracted view of the painting where several elements such as grapes, apples, etc., have been removed. In turn the infrastructure of the application tracks a mailbox and generates events that affect the painting by (elements appear or disappear). Weather Forecast is monitored through extracting data from a weather service and presenting a painting that simulates the current weather conditions. Sound effects are employed to capture user's attention when status changes occur. Time and user schedule are presented through manipulation of light. Light either directly projected on an object or reflected by another object is the key for understanding the world. To this end, impressionist works are employed whose movement put emphasis on the accurate depiction of light in its changing qualities (often accentuating the effects of the passage of time). The user's stock is visualized through the usage of a web service for retrieving stock values and the mapping of changes in stock to paintings related to prosperity or poverty. In all these visualizations there is an option controlled through the Controller to select additional output using speech synthesis.

#### **4.3 Education and Learning**

The usage of art for education and learning is accomplished by offering facilities for presenting information regarding a presented painting and its creator, and at the same time through offering interactive timelines of the artist's life and accomplishments. Artist's Timeline information is presented on the touch enabled back projection screen using an interactive visual representation. The screen is spitted into two horizontal spaces the one presenting the life of the artist and the other one the artistic accomplishments of his life. The user can manipulate through touch these timelines using basic gestures (touch from left to right to move the timeline forward and from right to left to move the timeline

backwards). By simply touching an event from the timeline the user can access more details of the event. Figure 1 presents an overview of the deployed applications.



**Fig. 1.** An overview of Informative Art applications

#### 4.4 Art Controller

The Art Controller acts as an orchestrator for the interactive applications and services deployed in the environment. The main categories that could be customized are the environment effects and the content of the display devices. The environment effects are

related to the audio output produced by digital frames (e.g., if the content is a storm then a sound of a thunder is reproduced) and the ambient light (the smooth alteration between the color of the environment's lights and the predominant color of the currently displayed artwork). Furthermore, options are provided for activating or deactivating the deployed hardware devices and controlling the content presented by the informative art displays.

## 5 Future Work

Potential improvements of the currently developed prototype application include the integration of new services such as gesture recognition for controlling the applications and the user localization based on computer vision for allowing the applications to be aware of the location of their users.

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## References

1. Wikipedia: Art [http://en.wikipedia.org/wiki/Art#Purpose\\_of\\_Art](http://en.wikipedia.org/wiki/Art#Purpose_of_Art).
2. Redström, J., Skog, T., & Hallnäs, L. (2000): Informative Art: Using Amplified Artworks as Information Displays. I: Designing Augmented Reality Environments. Proceedings of DARE 2000 on Designing augmented reality environments. Ellsinore, Denmark, pp. 103 - 114.
3. Holmqvist, L. E., and Skog, T. (2003): Informative Art: Information Visualization in Everyday Environments. In Proceedings of the first international conference in computer graphics and interaction techniques in Australia and Southeast Asia. ACM Press. P 229-235.
4. Miller, T. and Stasko, J. 2001. The InfoCanvas: Information conveyance through personalized, expressive art. In the Proceedings of CHI 2001, ACM Press. pp. 305-306.
5. Xiong, R. and Donath, J. 1999. PeopleGarden: creating data portraits for users. In Proceedings of the 12th Annual ACM Symposium on User interface Software and Technology (Asheville, North Carolina, United States, November 07 - 10, 1999). UIST '99. ACM, New York, NY, 37-44. DOI= <http://doi.acm.org/10.1145/320719.322581>.
6. Redstrom, J., Skog, T., and Hallnas, L. 2000. Informative art: using amplified artworks as information displays. In Proceedings of DARE 2000 on Designing Augmented Reality Environments (Elsinore, Denmark). DARE '00. ACM, New York, NY, 103-114. DOI= <http://doi.acm.org/10.1145/354666.354677>.
7. Ferscha, A., 2007. Informative Art Display Metaphors. In C. Stephanidis (Ed.): Universal Access in HCI, Part II, HCII 2007, LNCS 4555, Springer Berlin / Heidelberg, pp. 82-92.
8. <http://coe.sdsu.edu/eet/Articles/wadecolor/start.htm>: The Psychology of Color.