Introduction: LEA-ACM Multimedia Special

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Keywords

Abstract

ACM Multimedia is the premier annual technical multimedia conference, covering all aspects of multimedia computing. The ACM Multimedia Interactive Art Program's goal is to bring together the arts and multimedia communities to create the stage to explore, discuss, and push the limits for the advancement of both multimedia technology through the arts, and the arts through multimedia technology. In this article I will discuss the context in which the art program was created and its importance, and briefly introduce the articles in this special issue, which are a selection from the 2004 through 2006 editions of the art program.

Introduction

Each one of us belongs to several communities — the local community we live in, the community we work in, the community we play with. These communities or groups, however organized, are based on common goals, activities, or particular views. The common elements that tie people within a particular community together keep them "focused," on issues that emerge as being important within that community. One of the great benefits, then, is the generation and dissemination of common knowledge, particularly knowledge that the community itself has recognized as being important. One problem, however, is that often the work of a particular community has deep repercussions outside of that community and if recognizing what is important is limited to that particular community's views, the repercussions of some of that community's work outside of it may lead to negative, unexpected results. On the other hand, if the community is too focused within its own boundaries, that generated knowledge may be limited in scope and impact. As I will argue below, the creation of the ACM MM Interactive Art Program was born as a response to bridge an important gap in both of the communities it addresses.

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Computing is increasingly integrated into every imaginable human activity, to the point where it is an integral part, not only of our communication and knowledge creation processes, but also of the objects and resources we access on a daily basis. We don't necessarily think of computing when we buy milk at the store, when we make a phone call, or when we take a train or a bus. But it is there — almost like electricity, in many places becoming an essential gateway to all kinds of resources, and in many others a barrier to access them.

At the same time, we hardly think of non-multimedia computing, as even the automated teller machines (ATMs) we use rely on a combination of multiple types of input. Technical research in multimedia computing, therefore, has the potential of not just making an impact on computing, but of impacting the way we live, and perhaps more importantly access to resources necessary for human livelihood. This becomes even more crucial if we consider the majority of the world's population and not just those of us lucky enough to have direct access to computing.

Unfortunately, most technical research processes tend to focus on improving current technologies or solving problems created by those technologies, with little consideration of human abilities and limitations. Most importantly, cultural context is often ignored and dealt with only when the technologies are deployed and the (very inadequate) solution is usually simply to translate the software interfaces. The result is that most current technology is clunky, difficult to use, and culturally biased. This is dangerous because it contributes to the content gap (most quality content is created in developed regions), limits access to resources, and ultimately contributes to problems such as wealth distribution that in turn lead to other problems such as transnational migration.

Art has always played an important role in society, and one of its many functions has been to bring attention to particular cultural and social issues. Since technology has always had an impact on society, throughout history many artists have focused their work on experimenting with technology. In some ways, therefore, what artists are doing with computing today is not different from what artists did with other technologies centuries ago. The contribution of the arts to technical development can hardly be questioned because historically the experimentation has led to improvements in the technology, to new ideas on how that technology may be used, and to spread of its use. The complexity of computing, however, creates new challenges and opportunities.

From an artistic perspective, computing as a medium is in its infancy. This, and the maleability of computing has created opportunities in which most artworks that use computing technologies cross borders, often making them as much forms of expression as experiments on the use of technology. This is not new in art in general, of course, but the distinction between the art and technology boundaries is blurring to the point where many new media art programs are being created in academia to leverage the synergy between art and technology.

Having my feet in both worlds, I have often seen exactly the same installation in research laboratories as technical demos and also in art festivals as works of art. What makes artworks and technical demos different is often a point of heated debate, and beyond the scope of this special issue. What is clear is that there is much to explore in both areas and artworks as much as technology suffer from many common problems. Interactive artworks in public spaces for example are often difficult to use and often do not work as expected (interactive artworks that *crash* is not uncommon). One could argue that part of the problem is that many artists that create such works have a superficial understanding of technology. In addition, since most people outside these two communities are unfamiliar with many of the technologies used in the artworks, the message the artists try to convey to the general public often gets lost and instead the artwork participants are awed by the technical components.

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The ACM MM interactive arts program was created in this context, on one hand to impact technical research in multimedia, and on the other hand to expose artists to the sate-of-the-art. The art program has been held every year, in 2004 in New York City, in 2005 in Singapore, and in 2006 in Santa Barbara, California. In 2007 it will be held in Augsburg, Germany. The conference itself has several tracks and allows for different types of submissions, including long papers (typically 8 pages) and short papers (typically 4 pages), as well as technical demonstrations and videos. The Interactive Art Program consists of a full papers track, a short papers track, and a themed interactive art exhibition. The program was created to be held within the conference, so the sessions occur in the same location as the technical sessions. This allows technical researchers to attend art program sessions and artists to attend technical sessions. The exhibition, however, is held in a space open to the general public, typically a gallery.

The art program, thus serves three goals:

1. Impact technical research by exposing researchers to the cultural and social issues addressed in the arts

2. Expose artists to the state-of-the-art in multimedia research

3. Educate the general public through the exhibition

Creating an art program of this magnitude within a technical conference has many challenges that lead to interesting discussions. Designing a selection process that incorporates the desired objectivity judgments in a prestigious technical conference and the subjective assessments typically made when selecting artworks is a major challenge, as is having artists write a paper associated with the artwork they intend to present. The process so far, however challenging, has been extremely rewarding, and artists, researchers and developers have seen great value in this initiative, which is a permanent part of the conference and continues to grow every year.

The Interactive Art Program consists of two tracks:

1. conference, and
2. exhibition

Submissions to the conference can be long papers (typically 8 pages), or short papers (4 pages), which may be accompanied by videos or other supporting documentation. Exhibition submissions consist of a 2 page paper and supporting materials, including details of the proposed installation. Every year, the Art Program establishes a program committee of around 40 technical researchers, independent artists, and curators. One of the first priorities is to have a well-balanced committee in terms of interests, area of expertise, and seniority.

The main task of the program committee is to review the submissions according to the criteria pre-established by the Art Program chairs (e.g., artistic strength of the proposal, quality of the submitted article, novelty, etc.). Each submission to the conference is reviewed by at least three members of the program committee. In order to make the final selections, the reviews are then discussed by the chair of the program and in some cases the committee members. The process for selecting works for the conference is therefore very similar to the process carried out for technical conferences.

The main difference is the diversity of the program committee and efforts by the chairs to ensure that submission review assignments are well balanced between committee members who are more technical and those that are more concerned with the artistic contribution. Review assignment decisions are made on a case-by-case basis depending on the particular topic of the submission. Selections for the exhibition follow a similar

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process, but final decisions are made by a curatorial committee that is independent of the program committee. For the exhibition, the review process described above takes place first, and independently, each curatorial committee member reviews each of the exhibition submissions. The final selections are made in several meetings of the curatorial committee, based on the curatorial committee members' independent judgments, the assessment of the reviews by the program committee, and the discussions at the meeting—every single submission is discussed.

The goal of the curatorial committee is therefore to ensure that the works selected form a coherent exhibition according to the pre-established exhibition theme, placing more emphasis on the artistic strength in the selection of the works. From this perspective, the selection of works for the exhibition is similar to the selection for any themed exhibition, but input from the program committee is considered according to criteria that places more weight on artistic content (the review form for the exhibition is thus slightly different than for the conference track).

This is important because it ensures that the quality of the accompanying two page papers and technical quality conform to the conference standards. The process also helps eliminate some of the subjectivity associated with the curatorial process because in all cases program committee and curatorial committee members are asked to judge the selected works independently of the identity of the authors. No distinction is made between emerging artists, technical researchers, developers, students, or established artists. This is not always possible, of course, and in some cases additional reviews are requested by additional committee members if the review opinions differ significantly.

For this special issue I have selected eight works from the last three years of the art program (2006, 2005, 2004). I only considered articles published in the full papers track, as some of the works that have appeared in the exhibition and short paper tracks have been selected for a special issue of *Leonardo Journal*.

- Jodi James and colleagues' *Lucidity* describes a movement-based interactive dance performance, including the design of a real-time motion analysis engine, staging, and communication systems. The authors describe the technical details as well as the creative process.

- Chi-Min Hsieh and Annie Luciani's article presents a series of physics-based models for dance, which are useful for computer-assisted choreography and for character animation, which the authors consider predictive models for human behavioral research.

- Jürgen Scheible's article discusses two projects where multimodal user interfaces use personal mobile phones, a large public display, and the web to create and share interactive artistic experiences.

- Atau Tanaka's article discusses social music systems and particular implementations by the author and his colleagues which allow the creation of malleable music using mobile devices.

- Kazuhiro Jo and colleagues' sine wave orchestra article describes the concepts and technical details of a project in which sine waves generated by individuals are used to create a collective sound representation.

- Raquel Paricio and colleagues present a robotic installation that consists of evolvable hardware components in which the user interaction drives the evolution of the artwork.

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- Finally, Andrew Webb and colleagues' article describes a new type of affordance, the choreographic button, which integrates choreography, gesture recognition, and visual feedback. Jumping, a quick movement, and crouching, a sustained gesture, were choreographed to form a vocabulary that is personally expressive, and which also facilitates automatic recognition.

These articles where selected to showcase a very small sample of the wide range of topics presented at the ACM Multimedia Interactive Art program. They are representative, however, in the sense that the works described span multiple disciplinary boundaries, geographic locations, and collaboration between technical researchers and artists. In many cases, the authors themselves are artists, dancers, choreographers, and musicians. This is important to mention because the works have appeal in the technical community and in the artistic community, fulfilling the goal of bridging the gaps between them to generate fruitful discussions.

From this perspective, LEA is the perfect venue for these essays because it is a progressive, cutting edge platform that maximizes the use of technology and allows the use of audio, and video as a means for authors to share their works and thought processes. In addition, it is a platform that gives open access to the materials, which is very important in the generation of new ideas, particularly from the viewpoint of the role of technology in development argued at the beginning of this introduction.

My hope is that this selection of articles leads to discussions that are at least as interesting as those we have had in the arts program. To this effect, I leave the reader with some of the questions we used to start three discussion sessions in the 2005 version which we called "Research & Art Jams:"

1. Can researchers and artists play Mozart?

2. Can computers dance?

3. New sensors, new models: new art, or new science?

About ACM, SIGGRAPH, and SIGMM

ACM (Association for Computing Machinery) is an international scientific and educational organization dedicated to advancing the arts, sciences, and applications of information technology. ACM has a membership of computing professionals and students in more than 100 countries in all areas of industry, academia, and government and it is divided into several SIGs (Special Interest Groups), among which are SIGGRAPH (Computer Graphics and Interactive Techniques) and SIGMM (Multimedia). Each SIG, or community has its own magazine and journal publications and organizes its own conferences: SIGGRAPH and ACM Multimedia are the two main conferences within each community. ACM Multimedia is the premier annual multimedia conference, covering all aspects of multimedia computing: from underlying technologies to applications, theory to practice, and servers to networks to devices.

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Author Biography

Alejandro Jaimes is a Colombian artist and research scientist working and living in Lausanne, Switzerland since February 2007. He uses multiple media (photography, film, video, and writing) to explore issues related to cultural differences, similarities, and cultural awareness. His work has been exhibited internationally, in the United States (En Foco and Monique Goldstrom Gallery, among others), Japan (Tokyo Metropolitan Museum of Art), Chile (INCA-CEA, Santiago), and Colombia (solo exhibition at the Museum of Modern Art in Bogotá, and others). He holds a Ph.D. degree from Columbia University (New York) and he studied photography at Universidad de los Andes (Bogotá) and Columbia University. His research focuses on human-centered interactive media for creativity, particularly in creating new technical approaches for computer-understanding of multimedia content and for human interaction with computers in creative environments using computer vision techniques that use machine learning, that involve humans directly, and that are rooted in principles, theories, or techniques from cognitive psychology, the arts, and information sciences. He is the founder of the ACM Multimedia Interactive Art Program and an advocate of human-centered computing, in particular of changing technical research methodologies to include cultural aspects and consider the impacts of technology in developing regions. He has lived in Bogotá (Colombia), New York (USA), Santiago (Chile), and Tokyo (Japan).

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Established in 1993, Leonardo Electronic Almanac is, jointly produced by Leonardo, the International Society for the Arts, Sciences and Technology (ISAST), and published by MIT Press, is an electronic journal dedicated to providing a forum for those who are interested in the realm where art, science and technology converge. For over a decade, LEA has thrived as an *international peer reviewed electronic journal* and web archive covering the interaction of the arts, sciences, and technology. LEA emphasizes rapid publication of recent work and critical discussion on topics of current excitement with a slant on shorter, less academic texts. Many contributors are younger scholars, artists, scientists, educators and developers of new technological resources in the media arts.

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:: A Dynamic Life of Cause: A Concept and Models Used for Computer-Assisted Choreography —
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