# ACM SIGGRAPH History Archives: Reclaiming the Past

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## Abstract

The ACM SIGGRAPH History Archives is an online repository and physical collection of artifacts and documents from the ACM Special Interest Group on Graphics and Interactive Techniques. SIGGRAPH is an international organization that promotes, produces and disseminates research and creative work in the field of new media art, animation and computer graphics techniques. The SIGGRAPH History archive is in its development phase and was used for a major exhibition in Los Angeles in August 2023. This presentation focuses on the current status of the archive, and also the challenges and goals.

## Keywords

archive, SIGGRAPH, computer graphics, new media art, animation, history, emerging technologies.

## Introduction

The ACM SIGGRAPH conference is held twice a year, once in North America and once in either Asia or Australia [1]. The materials presented at the conference, whether art installations, technical papers, animations or emerging technology demonstrations, are often (but not always) documented on a website and sometimes as a PDF stored in the ACM Digital Library (ACM DL) [2]. Online access to this wealth of information sometimes involves use of the Wayback Machine [3], a paid subscription to the ACM DL or knowledge of exactly what you are looking for. In 2020, Bonnie Mitchell and Jan Searleman, along with the help of student interns and other volunteers began developing a web-based content management system that would enable easy access to this information. The ACM SIGGRAPH History Archive (see Figure 1) [4] developers scanned, formatted and entered conference materials into the archive as well as programmed the entire interface and back-end.
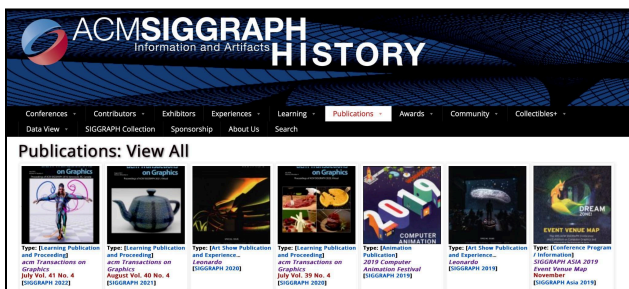


Figure 1: The ACM SIGGRAPH History Online Archive

## History Exhibition in Los Angeles

Nothing is more motivating than a major deadline. In August 2023, SIGGRAPH celebrated its 50th conference [5] and Bonnie Mitchell, a co-director of the SIGGRAPH archive, was in charge of the history displays and experiences. Not only did the archive team add thousands more entries to the online archive, but it also organized the hundreds of artifacts in the physical collection for this major exhibition in Los Angeles. Images and data from the archive served as fodder for the interactive animations in an immersive Time Tunnel displayed at the conference. A computer graphics historical timeline (see Figure 2) was developed with over 2000 entries and animated on the two opposing 125 foot (38 meter) by 14 foot (4.2 meter) walls of the tunnel. Interactive displays were projected on the floor throughout the tunnel where attendees interacted with the images and caught images from the archive. Attendees could affect the animations on the floor with their presence and reveal hidden images by stepping in various areas.



Figure 2. The Time Tunnel displaying the immersive, animated computer graphics timeline.

The artifacts from the SIGGRAPH archive were housed in display cases and a showcase of computer graphics hardware accompanied it in the 200 foot (61 meter) long alcove hallway. The archive was on display along with three videos including a documentary we produced entitled *Pioneers of Algorithmic Art*. All featured artists in the documentary were Distinguished Artist Award winners from past SIGGRAPH conferences. We also filled the hallways with past SIGGRAPH posters, covers of all SIGGRAPH conference publications (see Figure 3) and images of all SIGGRAPH T-shirts. We developed an AR app and SnapChat kiosk where a person could wear a SIGGRAPH T-shirt from the past, virtually. Historic computer graphics videos were displayed as well as a display of the first 3D rendering.
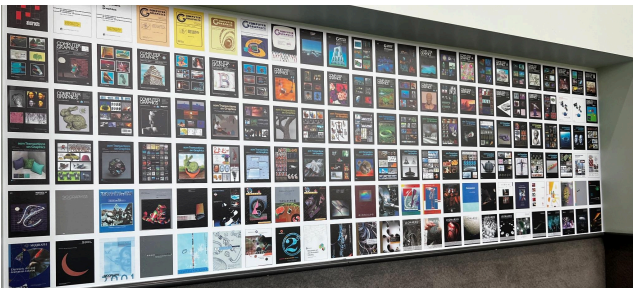
Figure 3. SIGGRAPH publication front and back covers from the Proceedings, and Art Show and Animation Catalogs.

Another component of the SIGGRAPH History celebration was Yamin Xu's "AI Connections Robot" (see Figure 4) that used images from the archive of SIGGRAPH pioneers, volunteers, committee chairs and community members. Although documentation of emerging technologies presented at the SIGGRAPH conferences were included in the archive, we wanted the actual installations and devices to be on display in Los Angeles. These included a newly developed mini CAVE (fully immersive multi-person VR environment), the original light field technologies by Paul Debevec, early AI robots as well as historic playable games and Pixar's complete collection of Walking Teapots.



Figure 4. Yamin Xu's AI *Connections* Robot tracks human faces and matches them with photos from the archive.

## Archive Development

The conference and exhibit in August 2023 in Los Angeles attracted 14,275 attendees from 78 countries. With the archive forming the backbone of this exhibit, we knew we would need to ingest data at a much faster rate to be ready for this major event. A volunteer, Manuel Alducin, wrote code to translate data from the ACM Digital Library to spreadsheets and our volunteer programmer, Luis Wilson, wrote code to import those files. We went from 26,704 entries in the archive to 40,562 in less than a year.

Before and during the conference, people donated materials to the SIGGRAPH physical archive. We received so many boxes of materials that we needed to add many more bookshelves and storage units to the archive room at Bowling Green State University (see Figure 5). All of this

material needed to be photographed, scanned, and entered into the online archive. This task was not trivial. Ironing, photographing and cleaning up the images of 153 T-shirts is not a task archivists typically relish. Also, artifacts and documents sometimes arrived with no clear provenance thus necessitating hours of research. The goal was to enter as many publications, technical papers, animations, artworks and collectible artifacts into the archive as possible by August 2023.
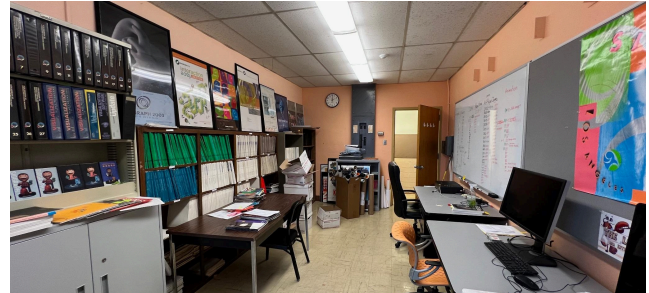


Figure 5: The ACM SIGGRAPH Room at Bowling Green State University

After the conference we were able to focus on entering non-standard, past conference programs that are no longer part of the conference. These events were very significant in their day. We started by entering Hypermedia events from the 90s and moved on to sigKID demos, workshops and panels. Sometimes these were one-offs—a special event that only lasted one year, other times they spanned a range of years. The archivists needed to scan and assess 50 years of conference Final Programs and decide whether a program could be combined with another or needed its own category. This also necessitated the need to redo all our menus and add Overview pages and hundreds of icons to list the people that were involved in the various programs. Finding this information took over 4 months of research.

## Challenges

Developing the ACM SIGGRAPH archive is a volunteer endeavor (see Figure 6) and we have no paid staff or directors. Thankfully, the Maxwell/Hanrahan Foundation provided support to hire a few student interns to assist.



Figure 6: Volunteers helping with the archive display at the conference.

Unfortunately the students graduate and move on so we are constantly training new interns. We also have a number of volunteers from various countries help us out. Coordination of these efforts requires immense organization and time. Also, scanning documents and the data entry process requires volunteers with an eye for detail. We began the proofing stage of the overall project but quickly realized that we needed to refocus on entering data from the thousands of missing entries that were available but not yet entered.

We joke about the black holes we constantly get sucked into. While working on an entry, we notice the person was entered incorrectly, then we notice that all the people in that category might have a wrong "person-type" and while fixing that, we notice that there are duplicate affiliations entered with the same name and after hours of correcting all these minor issues, we still have not completed the task we set out to complete originally. There are many errors we know exist but to fix them, it would mean dropping everything and spending a few weeks focusing on that specific issue. Therefore many errors remain in the queue waiting for that magic moment when we have the time to tackle the problem. We use Trello, a project management system to record them.

The quality of the older images and videos are problematic so we are using an AI up-rezing software package to re-render the old VHS-quality videos and extract representational images from them (see figure 7). We also still have information on slides, magnetic tapes and microfiche which still need to be dealt with.
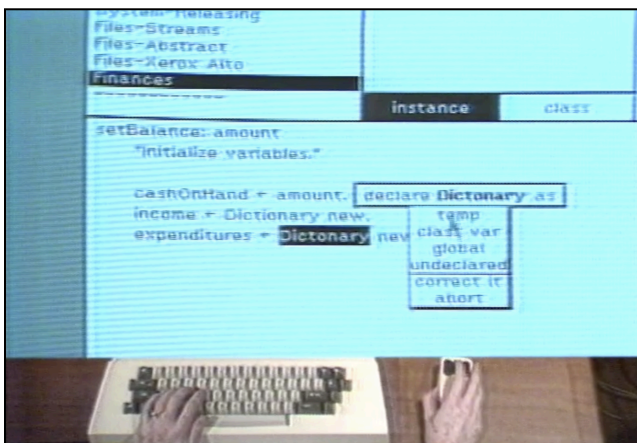

Figure 7: Original quality of VHS interlaced video

An issue facing all online archive developers is the problem of sustainability. Technology is constantly changing and therefore we must constantly update the code and digital resources used by the archive. The archive currently does not have a dedicated programmer. Thankfully the directors have extensive programming experience but finding time to tackle the problems is a challenge. In the spring of 2024, the directors needed to add thousands of lines of code to handle all the new conference programs that were added to the archive.

Without the help of the system administrator, the sustainability of the archive would be impossible. The online archive has endured hack attacks and has had system failures numerous times. Plugins become outdated and often updates to operating systems or software breaks our code, necessitating a rethinking of how we process information.

## Goals and Conclusion

The ACM SIGGRAPH archive developers aim to complete the data entry of the main conference programs by Fall 2024. This deadline, unfortunately, has been moved back many times. We currently do not have all the ACM SIGGRAPH Village Talks, Frontiers Presentations, Retrospective Talks, Posters or Technical/Art/Animation Talks, Exhibitor Talks, or Birds of a Feather sessions entered. Special events and non-standard entries that require interface changes may take longer. We aim to begin the process of entering the thousands of exhibitors in the Trade Show into the archive in the fall. Also, most of the SIGGRAPH Asia materials have not yet been entered into the archive (see figure 8).


Figure 8: SIGGRAPH Asia Art Papers & Presentations

Besides the conference materials that need to be added, we would also like to add 50 years worth of SIGGRAPH organization and committee materials to the archive. SIGGRAPH is an ACM Special Interest Group on Computer Graphics and Interactive Techniques. They promote the generation and dissemination of information on computer graphics and have amassed a wealth of information that is not yet in the archive. SIGGRAPH's standing committees, such as the Digital Arts Community [6], History Committee, Education Committee, Pioneers Group, etc. also have materials they want to contribute to the ACM SIGGRAPH Archives. Pioneers of computer graphics are aging and they also are interested in contributing their collections. With a heavy stream of incoming materials, it is unlikely that this archive will ever be able to be considered "done"

Currently the information in the archive is used by museums, artists, authors, technologists, students, teachers, and researchers. Although the archive development is often challenging and will not be done for a number of years, it is also an incredibly rewarding endeavor when we understand its impact on the global community.

# References

**Websites**
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# Author(s) Biography(ies)

Bonnie Mitchell is a new media artist and Professor at Bowling Green State University in Digital Arts, in Ohio, USA. Mitchell is a member of the ISEA International Advisory Committee and ACM SIGGRAPH History and Digital Arts Committee where she focuses on the development of their online archives. She is currently the SIGGRAPH 2023 conference History Chair in charge of the immersive Time Tunnel, history displays and retrospective talks. Her current creative practice focuses on development of physically immersive data visualization environments that showcase climate change over time. Mitchell's artworks explore spatial and experiential relationships to our physical, social, cultural and psychological environment through interaction, abstraction and audio. She has created numerous abstract visual music installations and animations that have been shown in hundreds of venues world-wide.

Jan Searleman taught Computer Science at Clarkson University for 37 years, retired in 2015, and since retirement has been an Adjunct Research Professor at Clarkson. Her research areas are Virtual Environments, Human-Computer Interaction, and Artificial Intelligence. A senior member of the ACM, Jan is also on two ACM SIGGRAPH Committees: Digital Art (DAC) and History. Jan and Bonnie Mitchell coordinated a DAC Online Exhibition "The Earth, Our Home: Art, Technology and Critical Action". She is co-director of the ACM SIGGRAPH History Archive with Bonnie Mitchell. Jan also co-directs the ISEA Symposium Archives with Bonnie Mitchell, Wim van der Plas, and Terry C.W. Wong. In 2022/2023, she was a member of the SIGGRAPH 50th Anniversary team. She also served on the organizing team for the Second Summit on New Media Art Archiving at ISEA2023 in Barcelona.