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Ethical Tech, Museums of Memory

When Ana Cárdenas Gasca began working with Colombia's National Center for Historical Memory in Bogota, where she is from, she set out to tailor existing interactive software to engage new forms of storytelling in the memorial space. Working directly with the museum's staff, she paid close attention to designing in a way that was relevant to viewers and, moreover, sensitive to victims. By employing mobile phone apps such as Instagram camera filters, she was able to weave narratives of trauma into layered virtual and hybrid viewer experiences.

Cárdenas Gasca's background in developing augmented reality (AR) — which can range from interactive smartphone apps like Pokémon Go to Google Glass and real-time 3D holograms — to engage with human rights violations directly inspired a new study on the ethical co-design of AR at museums of memory. The project was recently awarded a National Science Foundation grant.

A doctoral student in media arts and technology at UC Santa Barbara, Cárdenas Gasca is a graduate student researcher on the study, which is led by faculty and co-principal investigators Jennifer Jacobs, Tobias Höllerer and Kai Thaler, with Emilia Yang of the University of Michigan as a collaborator. To carry out a study of this kind, the team of researchers hail from across the disciplinary spectrum — engineering, art, design and the social sciences.

"Tobias and I are oriented towards building tech, but we were cognizant of our need to study communities and engage with this larger subject of human rights," said Jacobs, an assistant professor of media arts and technology, who directs the

Expressive Computation Lab. ”My lab hadn’t done extensive research in AR until Ana arrived, but we were excited by her research. We’re looking at how to engineer AR technology in collaboration with domain experts and practitioners.

“In this case,” Jacobs continued, “our immediate focus is understanding how to support museum employees in working with AR, but this research will also allow us to examine broader socio-technical questions such as: How should we approach AR development when the technology is being used to depict the experiences of real people? How do we develop value-sensitive AR technology? What role should victims have in design and engineering decisions when the technology is presenting their personal experience?”

The researchers will look at AR apps in the context of memorialization, with a focus on collaborating with human rights museums and organizations in Southern California and beyond that intersect with the cultural make-up of UC Santa Barbara’s student body as a Hispanic-serving and Asian-American, Native American and Pacific Islander-serving institution. The goal is twofold: to help develop AR applications for museums of memory, and to further our understanding on the limits of this technology when telling the stories of real people.

Central to the researchers’ approach is the notion of co-development: engineering new technologies in direct collaboration with the individuals or the community that are using or impacted by that technology. By incorporating knowledge directly from practitioners embedded within a specific community, engineers can develop more responsible technology for the people that will use it.

Jacobs and Höllerer, who directs the Four Eyes Lab, which has a long history in augmented reality research, said a model for ethical and responsible AR is imperative because AR has the potential to develop into a widespread technological platform.

“We have reason to be very cautious about what the widespread adoption of new technologies can do,” said Höllerer, a professor of computer science. “An overarching focus in my lab beyond augmented reality is on researching novel human-computer interaction technologies that can bring out and enhance human qualities.”

In contrast to technology that is no longer useful when it’s no longer there, Höllerer posits that the effects of AR have the capability to continue on after all devices have

been turned off.

“This grant will be used for technology that will increase users’ inherently human capabilities — awareness, new skills, new attitudes, new mindsets — so even when the technology goes away, just by people having experienced it, technology can help the humanity of humans,” he said.

As an assistant professor in the Department of Global Studies, with a focus in conflict, authoritarian settings and research methods, Thaler will contribute a critical social scientific perspective on the ethics of technologically supported memorialization. In his work, he frequently confronts questions of ethical practices in writing about and portraying sensitive subjects.

“We’re talking about some of the worst moments of people’s lives,” he noted. “How do we tell these sorts of stories and be sensitive to victims and their families while also fulfilling our educational mission to get a broader population to understand what has happened and to reject the sorts of politics that led to human rights violations in the past?”

Technology is often developed and deployed from the top down without enough thought to the social context and who is going to be using it, he pointed out. As a result, tech made in a bubble can fall flat with users, minimizing its effectiveness or even potentially causing harm.

In addition to Cárdenas Gasca’s experience in Colombia, the study builds on the first-person experience of Emilia Yang, an assistant professor of art and design with a focus on anti-racism by design, in responding to harsh government repression in Nicaragua — which killed more than 325 people after protests erupted in 2018. Working collaboratively with relatives of victims of repression and activists, Yang created Ama y No Olvida, the Nicaraguan Museum of Memory Against Impunity, to tell their stories and challenge the climate of impunity fostered by the Nicaraguan government. The transmedia project, composed of a physical and virtual exhibition, used AR to present digital altars, testimonies of the victims and maps of the events, with the digital museum remaining online even after repression has made physical exhibitions in Nicaragua impossible.

“With this research opportunity,” Yang said, “I am invested in thinking together with the group on how we can create AR experiences for holding spaces of grieving, healing and preserving diverse community memories, while reducing harm and

building accountability and safety with regards to the use of technology.”

The grant also provides the opportunity to further explore some of the initial opportunities of AR co-development that Cárdenas Gasca uncovered in her previous work in Colombia.

“From working with the museum of memory in Colombia, I learned that facing these stories is a cognitive and emotional effort for the audience,” Cárdenas Gasca said. “The curators of these exhibitions don’t just want to give a lecture, but they also want you to reflect and connect. We don’t usually think of hearing a victim’s story as a lecture, but as we listen to them, these stories are changing our minds.”

About UC Santa Barbara

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