Creating a Life-Sized Automultiscopic Morgan Spurlock for CNN’s “Inside Man”

2014-present

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We present a system for capturing and rendering life-size 3D human subjects on an automultiscopic display. Automultiscopic 3D displays allow a large number of viewers to experience 3D content simultaneously without the hassle of special glasses or head gear. Such displays are ideal for human subjects as they allow for natural personal interactions with 3D cues such as eye-gaze and complex hand gestures. In this talk, we will focus on a case-study where our system was used to digitize television host Morgan Spurlock for his documentary show “Inside Man” on CNN. Automultiscopic displays work by generating many simultaneous views with high angular density over a wide-field of view. The angular spacing between views must be small enough that each eye perceives a distinct and different view. As the user moves around the display, the eye smoothly transitions from one view to the next. We generate multiple views using a dense horizontal array of video projectors. As video projectors continue to shrink in size, power consumption, and cost, it is now possible to closely stack hundreds of projectors so that their lenses are almost continuous. However this display presents a new challenge for content acquisition. It would require hundreds of cameras to directly measure every projector ray. We achieve similar quality with a new view interpolation algorithm suitable for dense automultiscopic displays.

While the display has many applications, from video games to medical visualization, we are currently working on a much larger project to record the 3D testimonies of Holocaust survivors. This project, “New Dimensions in Testimony” or NDT, is a collaboration between the USC Shoah Foundation and the USC Institute for Creative Technologies, in partnership with exhibit design firm Conscience Display. NDT combines ICT’s Light Stage technology with natural language processing to allow users to engage with the digital testimonies conversationally. NDT’s goal is to develop interactive 3D exhibits in which learners can have simulated educational conversations with survivors though the fourth dimension of time. Years from now, long after the last survivor has passed on, the New Dimensions in Testimony project can provide a path to enable youth to listen to a survivor and ask their own questions directly, encouraging them, each in their own way, to reflect on the deep and meaningful consequences of the Holocaust. NDT follows the age-old tradition of passing down lessons through oral storytelling, but with the latest technologies available.

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USC ICT leverages its expertise in artificial intelligence, graphics, virtual reality, and narrative to advance low-cost immersive techniques and technologies to solve problems facing service members, students, and society.