

Light Stages

2001-present

Plastic-looking characters that do not fully blend with their surroundings can be a distraction rather than an enhancement in virtual environments. Convincing virtual characters are needed in training, educations and entertainment. The Light Stage systems and development at ICT are also examples of the collaboration between academia, the Army and entertainment industry that was imagined when ICT was established in 1999.

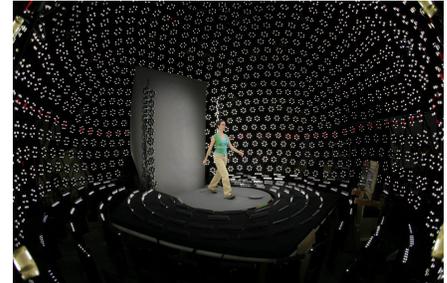
Virtual characters — digitally generated humans that speak, move and think — are a core component of ICT’s training and educations systems. Making these characters look realistic, as well as lighting them convincingly, is a central goal of ICT’s Graphics Laboratory, beginning with the Light Stage 2 and continuing through today with the latest Light Stage X (2011).

The Light Stages have been used to help create ever-more realistic virtual characters for ICT training and educations projects and by studios such as Sony Pictures Imageworks, WETA Digital and Digital Domain to create photoreal digital actors as part of the Academy Award-winning visual effects in Spider-Man 2, King Kong, The Curious Case of Benjamin Button and Avatar, as well as other Hollywood blockbusters.

In 2008, Light Stage V was used for the Digital Emily Projects, a collaboration with a digital animation company, Image Metrics, which produced one of the first digital facial performances to cross the “Uncanny Valley,” meaning it created a completely convincing virtual character.

In 2010 Paul Debevec, ICT’s Associate Director for Graphics Research and the co-developer of the Light Stage systems, received an Academy of Motion Picture Arts and Sciences Scientific and Engineering Award (Academy Award) for the design and engineering of his Light Stage technologies. The award recognized more than ten years of research, development and application of technologies designed to help achieve the goal of photoreal digital actors who can appear in any lighting condition. It was presented to Debevec and his colleagues, Tim Hawkins of LightStage LLC, John Monos of Sony Pictures Imageworks, and Mark Sagar of WETA Digital, who co-developed the system with him.

Project Leader: Paul Debevec



At the University of Southern California Institute for Creative Technologies leaders in artificial intelligence, graphics, virtual reality and narrative advance low-cost immersive techniques and technologies to solve problems facing service members, students and society.