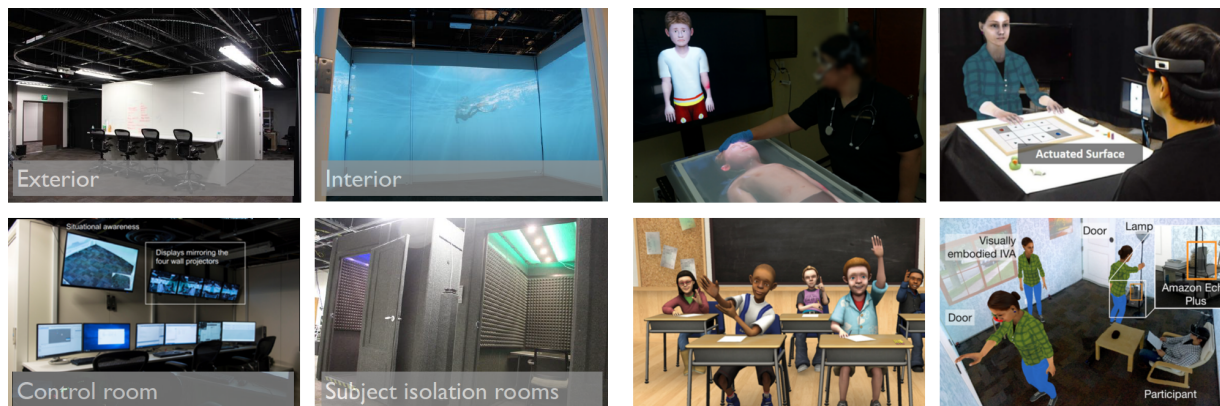


The Synthetic Reality Lab (SREAL)

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(a) Human-Surrogate Interaction Space

(b) Research Prototypes and Example Applications

Figure 1: Examples of SREAL laboratory research setups, equipment, and prototypes.

ABSTRACT

SREAL (pronounced Surreal) is a research lab at the University of Central Florida (UCF), which is located in the “City Beautiful” Orlando in the “Sunshine State” Florida (USA). The SREAL team includes faculty researchers, software developers, graduate and undergraduate researchers, artists, and collaborators across campus and around the world.

The core faculty members include Prof. Greg Welch, Prof. Charlie Hughes, and Prof. Gerd Bruder. Alumni and former advisees are now engaged in their own research all over the world, in both academia and industry. While we work hard and strive for excellence, the lab has a very collegial spirit, reinforced by both workplace practices and external social events.

Research at SREAL is inherently interdisciplinary with professionals and subject matter experts in a broad range of research and application fields in the scope of Computer Science, Engineering, Psychology, Healthcare, and Defense. Recent papers presented at IEEE ISMAR include an investigation of the convergence of augmented reality, intelligent virtual agents, and the Internet of Things [2] as well as an in-depth review of augmented reality research trends [1]. Publications and research efforts at SREAL have received much praise and been honored countless times, such as with Best Papers Awards and a graduate student was awarded the prestigious National Center for Women & Information Technology Collegiate Award in 2018. All members of SREAL are committed to diversity and inclusion of underrepresented groups in society.

The lab space consists of over 7,000 square feet of experimental and office space, and includes a wide array of virtual, augmented, and mixed reality equipment, as well as unique infrastructure such

as the Human-Surrogate Interaction Space (HuSIS). The HuSIS includes a central room-sized space for human subject experiments and is outfitted with projectors, head-mounted displays, tracking equipment (body and eye), cameras, and physiological measurement devices that support measuring human responses (physiological and behavioral) during controlled experiments. The lab also includes transportable HuSIS capabilities that support experiments and demonstrations “in the wild” using a wide range of cross reality sensor and display technologies.

SREAL is part of several larger UCF entities, most notably the Institute for Simulation & Training (IST), which houses it, and the Department of Computer Science, which is the home department of most of SREAL’s graduate and undergraduate students.

Index Terms: Human-centered computing—Human computer interaction (HCI); Human-centered computing—Mixed / augmented reality; Human-centered computing—User studies; Computing methodologies—Mixed / augmented reality; Software and its engineering—Virtual worlds training simulations; Applied computing—Psychology

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