

Mixed Reality/Augmented Reality

Microsoft's foray into Mixed Reality. Runs Windows and can be controlled with a mixture of voice and hand gestures.

Newly released and a serious contender to the HoloLens. Will probably be best for gaming and showcase experiences.

Heads-up display headset that gives AR features in a lightweight pair of glasses linked to an Android device. Plays 360 video and allows for hands-free experiences.

Apple/Google's software to create AR applications on smartphones and tablets. Detects planes like floors, tables, and walls to fix digital objects within the environment viewed onscreen.

MR

AR

Hardware

HoloLens*

Magic Leap*

Epson Moverio

ARKit/ARCore

VivePro* Vive

Oculus Rift (w/ Oculus Touch)

**Lenovo Mirage*
Oculus Go*
GearVR**

**Google
Cardboard**

Virtual Reality

Room scale experience with great controller scheme. The Pro is the best of the best, and the Vive is high-end prosumer hardware.

Features competent controllers and some good "exclusive" software. A solid upper-middle end piece of hardware.

Standalone systems that feature good top-notch portability. Ideal for showing experiences at scale. Cost-effective and designed for the masses.

The system for anyone and everyone with a compatible smartphone. Best option for massive application in classrooms.

Now Showing

Examples of titles available at today's Showcase

theBlu (ocean habitats)

VR Chemical Model

Tilt Brush (3D painting)

Universe Sandbox (physics-based space simulator)

A variety of other XR experiences are being provided today by University Libraries and Lenovo.

“VR / MR / AR are not separate and distinct things. They’re convenient labels for different points on a spectrum.” – Clay Bavor, VP of VR and AR at Google

“VR Definition #11: VR is the most centrally situated discipline.” – Jaron Lanier, “Father of Virtual Reality” & Interdisciplinary Scientist at Microsoft Research.

Know the Lingo

XR

X Reality is the currently accepted term to capture the reality-virtuality continuum. The term can mean extended reality, or use the variable X to refer to various kinds of immersive technologies.

VR

Virtual Reality refers to a predominantly simulated environment. Creates the most visually compelling experiences, especially when paired with sophisticated controls.

AR

Augmented Reality overlays objects, images, and displays on top of the world around you – typically meant to reflect on the world.

MR

Mixed Reality is used to refer to technologies like the Microsoft HoloLens or Magic Leap, which combine depth sensing and environmental scanning so that digital objects can interact with the real world.

Disciplines Using XR at UNC

Pharmacy, Chemistry, Romance languages, History, Classics, Law, English, ITS classrooms, Campus Tour, Athletics, Religious Studies, BeAM, Archeology, Communication, Digital Humanities, Health Informatics, Information Science, Neuroscience, Pediatrics, Biomedical Engineering, MD program, Burn Center, Computer Science (motion capture, machine vision, AR surgery, etc.), MEITE (Education), Space Club, Planetarium, eSports club

Events: Hack NC 360 Livestream, THInC Hackathon, 1789 Workshop

Campus Support for XR

ARVR Interest Group – 220 members on listserv, (almost) monthly meetings. Open to anyone at UNC and beyond.

CARVR student group – meetings, project-based focus

XR Faculty Learning Community - Monthly meetings, pedagogical focus.

Center for Faculty Excellence:

- CFE/Lenovo Instructional Innovation Grants (XR awards): Libraries, Medicine, Religious Studies, Education
- XR focus for Faculty Showcase on Teaching

Libraries: HTC Vive and workshops at UL and KSL, Demos and eye-tracking* at HSL

Get involved with XR at UNC:

arvr@unc.edu | @ARVR_UNC
<http://arvr.web.unc.edu/>

Disciplinary example: Applications in Healthcare

Psychology – relaxation (meditation), facing trauma (PTSD, fear of heights, flying, snakes, etc.), anxiety (public speaking, revealing HIV status), smoking cessation, eating disorders, autism (social cognition)

In-patient use - pain management, overcoming loneliness and depression, motivating movement, patient education

Education – going impossible places (blood stream, molecular bonding, anatomy, etc.), empathy, telestration

Physical training – athletics, fitness, physical rehabilitation

Professional training – surgical planning and practice, practicing CPR and Heimlich maneuver, radiology

Rehabilitation - stroke, vision disorders, attention, balance, memory