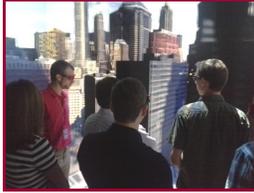


Take a Walk on the Virtual Side of Reality

Immersive Google Earth

Islam Ebeid, Carolina Cruz-Neira

Google Earth is an incredible tool for exploring our planet from the macro-scale down to individual houses, landscape details, and sites. We have been working on developing a cluster-enabled extension of Google Earth to support visualization into virtual spaces. Users can “fly” through our planet, land on top of landmark buildings around the world, and visit exotic locations. We can also incorporate data analytics information to allow industry partners to explore their data in a geospatial context.



3D Sculpting

Carsten Neumann



One of the most exciting aspects of virtual reality is how much it stimulates our imagination. We have developed a 3D free sculpting environment in the CAVE that enables users to explore their creativity by manipulating virtual clay. The user can shape

it, squeeze it, poke it, cut it, and create amazing objects and worlds interactively. The main goal of this application is to explore how immersive environments can be used as a place to create new shapes and new worlds from within.

Augmented Reality Engine Maintenance

Juan Muñoz, Alex Jaeger, Dirk Reiniers, Jay Zak

Mobile devices are opening a wide range of application areas for virtual and augmented reality. We are collaborating with several industry partners to build augmented reality-guided repair and maintenance procedures for several products and to provide a training resource for mechanics and support personnel.



3D Touch Table

Alex Jaeger, Bryan Koch, Tom Coffin

Direct manipulation of information through touch is becoming a common interaction modality. We find it in our cell phones, when we do banking, checking in for a flight, museums, and many other environments. We are investigating the next level of touchable interfaces that incorporate large surfaces, simultaneous co-located multi-user collaboration, 2D gestures, and augmented 2D/3D interaction. We are building a table system that supports 3D display and a 3D volume of interaction on top of the surface. This will enable users to manipulate virtual objects on top of the table.

Interactive Posters

Tom Coffin, Elizabeth Pierce (Department of Information Sciences), Tom Clifton (Department of Art)

The EAC is merging art, science and engineering through a collaborative educational program in which freshmen students from art and engineering collaborate together to create new applications for immersive technologies. This collaboration is opening the door for many young students to prepare themselves for exciting and non-conventional careers in the emerging industry of virtual reality.

3D Points

Yassine Belkhouche, Dirk Reiniers

EAC researchers are exploring feeding live 3D Point Clouds captured directly from sensors placed in the real world. The project's goal is to provide CAVE users a 3D real-time view of particular areas in the world. This view incorporates dynamic elements, such as traffic, pedestrians, and other temporal variations. In the long term, the user will be able to control the location of 3D scanners to explore larger areas, zoom in for more details and other display aspects.

A Halloween Experience

An Open House event so close to Halloween would not be complete without a “Halloween-Themed” demo on the tour. The EAC staff and students will present a prototype for a virtual reality “Haunted Hall”.

This part of the tour will offer visitors a final treat as they wrap up their visit.



Emerging Analytics Center Open House

Discover Virtual Reality

Come,
Experience,
Explore



October 16 –17, 2015

10:00 am — 5:00 pm

eac.ualr.edu
501.569.8140

The EAC Open House Tour Experience

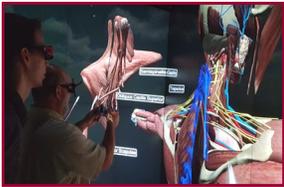
The George W. Donaghey Emerging Analytics

Center (EAC) has an energetic group of faculty, staff, and students performing innovative research in technology, infrastructure, and interactive applications for virtual and augmented reality. The team's work encompasses a wide range of topics that range from the development and use of large-scale one-of-a-kind systems to pioneering market-ready applications for every day portable technologies like cell phones and tablets.

During the EAC Open House, visitors will have the unique opportunity to experience projects under development as well as test prototypes, physically walk inside virtual environments, and have a first look at our augmented reality applications for mobile devices. Attendees can also chat with EAC's visionaries, digital innovators, and engineers pioneering this technology, glean the latest trends in interactive systems, and pick their minds about their future projects. Immerse yourself in technology, innovation, and creativity!

Anatomical Eyes

Carolina Cruz-Neira, Carsten Neumann, Thomas G. Pait (UAMS)



Medical schools have taught medicine the same way for over 100 years. Virtual reality can change that enabling the next generation of physicians to experience a wide range of hands-on anatomical explorations

that can reveal the diversity of diseases and conditions prior to practicing on actual patients. The project's goal is to promote better diagnosis, shorter treatments, and improved patient care through better understanding of anatomy.

Oculus Rift

Bryan Koch, Casey Megginson



The Oculus Rift is perhaps the most popular virtual reality device today. This device has brought virtual technology to the mass market and the public eye. Visitors will have the opportunity to try the Oculus Rift and

experience several applications related to education, gaming, architecture, and virtual heritage.

X-Ray Gown

Carolina Cruz-Neira, Carsten Neumann, Jay Zak

This project explores the use of augmented reality to visualize the inside of a patient's body. A specially designed medical gown enables doctors to align imaging data on the body of the patient and observe aspects such as "before and after," external conditions that may reflect the internal condition; as well as to allow the physician to educate the patient on his condition and possible care after leaving the hospital.



Interactive Interior Design

Carsten Neumann, Jay Zak



Our research team is exploring the use of immersive spaces to perform interactive design. Our current project focuses on designing a reconfigurable aircraft that can support various types of mission control. The project model has several stations;

radar, weather, communications, etc., that can be placed throughout the airplane's cabin. The user receives feedback regarding whether the stations are placed correctly, if there are any blockages, collisions, or incorrectly placed stations. This project will be extended to other design environments as our research activities expand.

360° Helicopter Flight Simulator

Dirk Reiners, Carsten Neumann, Carolina Cruz-Neira, Don Pierce (Micoy Corp.)

In collaboration with Micoy Corp., we have developed a proof-of-concept prototype focused on the development of a novel image generator system, specifically designed for helicopter flight simulation and training. Our simulator provides a real-time ray tracer that incorporates a 360-degree stereoscopic display, specialized algorithms to display small-detail visuals, and rendering methods for real-time shadows. This simulator is different from other flight simulators in that it has been designed specifically for helicopter flight training.



Architectural Explorations

Thomas Coffin, Jay Zak, Dirk Reiners, Carsten Neumann, Hank Merkel (Nabholz), Jake Nabholz (Nabholz), David Sargent (WER Architects)

Virtual reality offers an excellent venue to review, evaluate, and explore architectural environments before they are built. Architects, builders, and customers can jointly "walk" through new construction plans, to insure they understand the space, the building process, and refine the design and construction process to ensure smooth project development and completion. The EAC is working with Arkansas-based companies, Nabholz and WER Architects, to model upcoming construction projects in the CAVE that will help customers visualize and understand the layout and the construction process.



University Village

Brent Blasingame, Jay Zak, Dirk Reiners

The UALR campus is undergoing exciting growth and changes. Within a few years, the campus will be a vibrant example of how a metropolitan university can become an economic development force that revitalizes its

surrounding areas. We are using EAC technology to give our students, faculty and the Little Rock community an interactive visualization of how the campus and its surrounding areas will appear in just a few years from now.



Touching Virtual Objects (Haptics)

Alex Jaeger, Juan Muñoz, Dirk Reiners

EAC researchers are testing ways to touch, feel the weight, and interact with virtual objects. This project utilizes a haptic robotic arm to bring the sense of touch and forces into the virtual space. Users can manipulate several objects, feel them colliding with others, push them through tight spaces and other interactions that can be enhanced through touch and force.

