IDIA LAB

BALL STATE UNIVERSITY

INSTITUTE FOR DIGITAL INTERMEDIA ARTS

COLLEGE OF ARCHITECTURE AND PLANNING

2022.1

UPCOMING

IDIA Lab is producing a virtual world platform to facilitate next-generation concepts for international lunar habitat design for the International MoonBase Alliance (IMA) - an association of leading space scientists, educators, and space agencies.

IDIA Lab is contracted by the US Department of the Interior to design extended reality applications for Mesa Verde National Park. We are developing solutions to bring traditional museum dioramas to life through emergent technologies.

IDIA's Wishing Well uses visitors' interactions to shape the substance of an experience – mediated through artificial intelligence. Custom IDIA software employs AI processes by IBM's Watson and Amazon's Polly technologies. https://bit.ly/3r2OaJe

College of Architecture and Planning's IDIA Lab creates technological innovation in the arts, sciences, and humanities. The Lab engages students, staff, scholars and clients in collaborative projects including 3D, virtual and augmented reality and mobile applications. This newsletter includes updates on current IDIA Lab projects including artificial intelligence voice for both healthcare and teaching simulators, an immersive virtual reality exhibition of the Angel Mounds site in Southern Indiana for the Indiana Museum of Archeology and Anthropology, a virtual escape room for the BSU College of Health, a multi-user simulation for the International MoonBase Alliance, and a revised English version of our AI Wishing Well installation (originally in Mandarin) which was last exhibited at the National Museum of China.

VIRTUAL REALITY MUSEUM EXHIBITION

Angel Mounds Interior

IDIA Lab has been contracted to develop a permanent exhibition for the new Indiana University Museum of Archeology and Anthropology in Bloomington, IN. The exhibit will create a large-scale immersive experience exploring Angel Mounds in Southern Indiana, one of the best-preserved pre-contact Native American sites in North America. Built between A.D. 1000 and 1450, the community was occupied by more than 1,000 people who were part of a expansive Mississippian culture. In addition to recreating the site as it might have stood in

Angel Mound Exterior and Canoe

the 15th century, IDIA will virtually simulate correct solar and lunar positioning using NASA JPL data, exploring the many celestial alignments known to exist.

The IDIA Lab is employing high-resolution LiDAR data captured by a drone, to create a snapshot of the current site. After removing modern elements, trees, roads, etc. a reconstruction model is being designed that includes absent features - surveyed in the 19th century but lost to modern development. The virtual, large scale GeoDome system is designed by our partner, the Eluminati, who also constructed IDIA Lab's current CAVE system in CAP. The virtual exhibition will allow groups of visitors to immersively explore various aspects of the life, objects, environment and culture of these indigenous Mississippian people. The exhibit will be launched in 2022.

Virtual Escape Room

In this collaboration we are developing a virtual multi-user escape room. Escape rooms employ innovative learning strategies such as problem-based, immersive learning, role play, and game principles to improve teamwork, communication and leadership. Nationally, health profession curricula are beginning to explore the use of escape room experiences as innovative pedagogy. Escape rooms challenge individuals to collaboratively explore new content, work as a team to discover clues, solve puzzles, and accomplish interactive tasks in a limited amount of time. The virtual multi-user virtual escape room will support teaching teamwork and communications curricula for health profession students and contribute to improved health outcomes.

NEH VIRTUAL HERITAGE SIMULATION

Newark Earthworks

IDIA Lab is developing an interactive 3D simulation through a grant from the National Endowment for the Humanities' Office of Digital Humanities. Already a National Historic Landmark, Ohio designated the Newark Earthworks as "the official prehistoric monument of the state" in 2006. Spread across four miles in what is now present-day Newark, Ohio, mounds and walls are constructed to record significant celestial alignments on the landscape, including the 18.6-year lunar cycle. The earthworks created community for the Hopewell People and provided sacred spaces for religious rituals and ceremonies related to their society. The Newark Earthworks comprise the largest set of geometric earthen enclosures in the world, built by the Hopewell People between A.D. 1 to A.D. 400 to serve a variety of cultural and spiritual purposes. The earthworks are in currently under consideration for UNESCO World Heritage status.

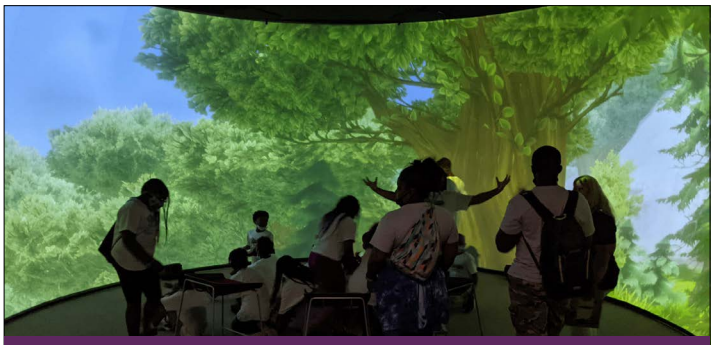
The simulation re-creates a virtual interpretation of the Newark Earthworks with simulations of ancient celestial alignments.. IDIA Lab is partnering with BSU's Applied Anthropology Lab and the Ohio History Council to provide the archaeological data and interpretation. IDIA is digitally recreating the site's Octagon Earthworks and simulating the sky, moon and stars with accurate virtual celestial bodies using data from NASA's Jet Propulsion Laboratory to allow users to view the stars, planets, moon, and sun as they appeared 1800 years ago.

TWEETS

- Our Virtual Wild West Exhibit AR App for the Cody Center for the West has been updated and downloadable at the Apple App Store and Google Play
- IDIA recently added realistic voice to an AI Virtual Patient simulation for the University of Washington School of Medicine
- IDIA Lab is partnering with Elumenati, LLC in creating a catalog of IDIA VR experiences for museums and planetariums around the world

OHIO ARCHAEOLOGICAL COUNCIL

Ball State's Applied Anthropology Laboratories (AAL) and the Institute for Digital Intermedia Arts (IDIA Lab) presented to the Ohio Archaeological Council on our collaborative research project with the Ohio History Connection and the Ohio Center for History, Art & Technology on our Level II Digital Humanities Advancement Grant to develop an interactive 3D simulation of the Newark Earthworks. https://bit.ly/3IJUw6r

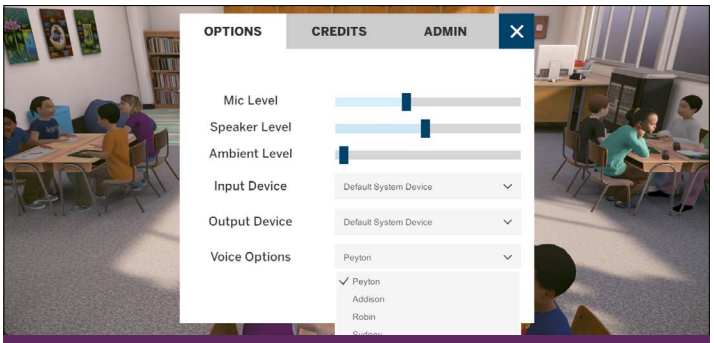


INDY CHILDREN'S GROUP TOUR

CAP's Olon Dotson, Chair of Architecture, hosted children from Indianapolis participating in the Freetown Village: A Living Experience in Black History for a visit with IDIA Lab staff to explore our extended reality projects. Freetown Village is a living history museum with the mission to educate the public about African American lives, arts, and culture in Indiana through living history, exhibits, allied programs, and collections.

VIRTUAL TRAINING SIMULATION

IDIA is designing an interactive virtual training simulator for Rutgers University School of Health Professions. The project immerses students within TeamSTEPPS, a framework of interdisciplinary collaboration and teamwork tools, aimed at optimizing patient outcomes by improving communication among health care professionals. Students will learn best practice skills and apply them in lab-based scenarios.



VIRTUAL TEACHING SIMULATOR

IDIA Lab introduced new AI synthesized voice functionality to our Virtual Teaching Simulator project funded by the National Science Foundation. The simulation uses Amazon's Polly voice synthesis (Alexa) to realistically simulate the voices of both children and teachers. The synthesized voice functions both for accessibility and to augment the realism for role playing various persona.

ABOUT IDIA

The Institute for Digital Intermedia Arts at Ball State University explores the intersections between the arts, sciences and technology. Scholarly, creative and pedagogical projects investigate virtual reality, Human Computer Interface, augmented reality, mobile apps, visualization and 3D simulation. The lab's staff, faculty and students develop collaborations in partnership with a host of international clients in this innovative studio initiative developing projects at the forefront of emergent media design.

Institute for Digital Intermedia Arts / College of Architecture and Planning | Ball State University | Muncie, IN 47306
IDIA Lab: (765) 285-4325 | http://idialab.org