

IDIA LAB

INSTITUTE FOR DIGITAL INTERMEDIA ARTS
BALL STATE UNIVERSITY
virtual reality + hybrid arts + simulation + human computer interface

2015.1 UPDATE

UPCOMING

MUNCIE SESQUICENTENNIAL

IDIA Lab was invited to develop two large-scale interactive projects for the upcoming Muncie 150th Anniversary Celebration during the October Artswalk. The Lab is producing both works in collaboration with county, municipal, local and university partners.

BIOMECHANICS SIMULATOR

BSU's IDIA Lab is beginning development on a virtual simulator for patients with balance impairment. Our software and 3D content will provide switchable immersive scenarios using a floor pressure plate and the Facebook's Oculus Rift headset.

NUTRITION AND DIETETICS SIMULATION

The Academy of Nutrition and Dietetics is contracting with IDIA Lab to develop a virtual scenario-based training simulator. The simulation will provide instruction to a national audience of students via playable characters engaged in interactive dialogue and assessment.

NEWS

Hybrid Design Technologies, through the Office of Information Technology is an evolutionary extension of the IDIA Lab's innovation in virtual and hybrid environments. This newsletter includes updates on current IDIA Lab projects including our research and visualizations featured on the season finale of The History Channel's The Universe series – a special episode on Roman engineering and celestial alignments; a contract for an Android based life-skills game with Creative Associates International; the launch of a BSU created virtual world, REDgrid; research and development of next generation VR tools; and the Virtual Buffalo Bill Wild West show.



Screenshot from The History Channel's The Universe Series: Roman Engineering. IDIA Lab, Ball State University, 2015



Screenshot from *The History Channel's The Universe Series: Roman Engineering*. IDIA Lab, Ball State University. 2015



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BSU'S IDIA LAB ON HISTORY CHANNEL'S THE UNIVERSE

Ball State University's IDIA Lab was contracted to produce computer animation for the History Channel's *The Universe* series finale. The episode airs May 23rd, 2015 and prominently features IDIA Lab's research, scholarship, art and design work. The production company visited Ball State in November 2014 to conduct interviews with director John Fillwalk and shoot footage of IDIA staff and facilities. The episode site's BSU's innovation and expertise in the use of digital scholarship in reconstructing lost heritage sites – with particular emphasis on the study of celestial alignments. In addition to BSU staff, the episode includes experts such as American physicist Michio Kaku, City College, NY. Last year, History Channel came to BSU to collaborate with IDIA on a Stonehenge episode. IDIA Lab has developed a specialized expertise in a process in partnership with NASA's Jet Propulsion Laboratory Solar System Dynamics Group to provide data from their Horizon's database to a live virtual environment - pulling positional information from tens of thousands of celestial bodies including the sun, moon, planets, asteroids and comets. The data can be accessed for any year from 9999 BC to 9999 AD – accounting for changes in the Earth's orbit and polar orientation over time. This accurate positional data can then be used to simulate celestial positioning for geo-referenced archeological sites with known or suspect alignments.

<http://www.history.com/shows/the-universe>



Screenshot from *The History Channel's The Universe Series: Roman Engineering*. IDIA Lab, Ball State University. 2015



Oculus Rift. IDIA Lab, Ball State University. 2015

NEXT GENERATION VR

Facebook's Oculus Rift virtual reality headset allows users to be immersed within virtual 3D worlds. When paired with the Leap Motion, users now have the ability to interact with a 3D virtual world using their own hands – our most natural means of interacting with our environment. The visual displays on the Oculus Rift project the user into an stereoscopic 3D high-definition environment. The Leap Motion then allows additional interactivity via infrared imaging of the users' hands. Together, these two pieces of hardware create exciting new possibilities – all using custom software designed by IDIA Lab. View an Oculus / Leap project here: <http://idialab.org/oculus-rift-and-leap-motion-demo/> IDIA Lab also designed and created a series of brackets that connect the Oculus Rift DK2 with the Leap Motion. We distribute the files for our three brackets through Thingiverse. The brackets can be viewed and downloaded here:

- Bracket 1 Straight bracket used for visual IR passthrough from Leap camera
- Bracket 2 Straight bracket used to minimize Oculus IR emitter occlusion
- Bracket 3 Angles bracket used to track hands with best angle – if no passthrough is desired



Hero's Horizon. IDIA Lab, Ball State University. 2015

ANDROID LEARNING GAME FOR AT-RISK YOUTH

BSU's IDIA Lab is developing a mobile serious game on the Android platform for deployment internationally to over 10,000 students: teaching life-skills to at-risk youth. The project is being developed for Creative Associates International, an international development organization providing social services and delivering sustainable solutions to global challenges. Its experts focus on building inclusive educational systems, transitioning communities from conflict to peace, developing sustainable economic growth, engaging youth, promoting transparent elections and more. <http://www.creativeassociatesinternational.com> IDIA is developing the game in Unity as an immersive three-dimensional hand-held game in a graphic novel style. The game tracks the player as they move through a hypothetical city, working through conflict, choosing outcomes and creating partnerships. Deeper content within additional online curriculum is also explored. Achievements, levels, upgrades, badges and mini-games populate an interactive life-skills game. IDIA Lab has partnered with staff in BSU Information Technology and iLearn, as well as professional screenwriters to develop this instructional project.



Virtual Buffalo Bill. IDIA Lab, Ball State University. 2015

VIRTUAL BUFFALO BILL'S WILD WEST PROJECT

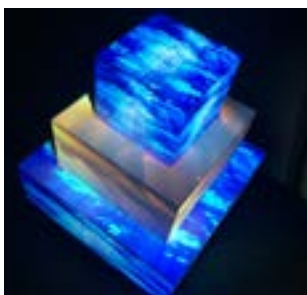
The Virtual Buffalo Bill's Wild West Project creates an interactive, three-dimensional simulation of Buffalo Bill's popular portrayal of the American West and an accompanying digital archive of source materials. The project involves collaboration between the Buffalo Bill Museum in Cody, Wyoming; and Ball State University's Center for Middletown Studies, Department of History and IDIA Lab. It will create a unique virtual experience that provides a new way to visit and understand various dimensions of American history. The 3-D simulation will include live and scripted interpretive animations, as well as avatar-driven role-playing exercises that explore selected aspects of Buffalo Bill's Wild West.



BSU DEVELOPS VIRTUAL WORLD FOR TEACHING AND LEARNING: REDgrid

REDgrid. IDIA Lab, Ball State University. 2015

IDIA is pleased to announce REDgrid - a 3D virtual campus to support the educational mission of faculty, staff and students. Ball State community members can use it for free as a virtual gathering space including classroom instruction, small group meetings, presentations, panel discussions, or performances. It is a secure environment hosted and managed solely by Ball State's IDIA Lab. Virtual classrooms or field experiences can be customized as well as made private to suit your needs. REDgrid also offers a developmental platform for online instruction or community displays. <http://idialabprojects.org/redgrid/> For access please contact IDIA Lab Faculty Fellow Stephen Gasior, BSU Assistant Professor of Biology slgasior@bsu.edu.



IDIA LAB HELPS CAP CELEBRATE THEIR 50TH ANNIVERSARY

BSU College of Architecture and Planning celebrated their 50-year anniversary with special symposia and demonstrations from alumni and other experts, including a Charles Sappenfield Lecture by Thom Mayne, a 2005 Pritzker Prize laureate. A Beaux Arts Ball, held at Minnetrista, capped off the anniversary celebration. IDIA Lab created a projection-mapping cake project, collaborating with CAP staff and an interactive signage installation which responded to music, both viewable here in a video: <https://youtu.be/EjTNZJSq8k0>
Read press release here : <http://cms.bsu.edu/news/articles/2015/4/cap-celebrates-50th-anniversary>



KEYNOTE: VIRTUAL WORLD BEST PRACTICES IN EDUCATION

IDIA Lab director John Fillwalk was invited to keynote at the 2015 Virtual World Best Practices in Education conference. His talk, *Shared Environments: Shaping Immersive Experiences*, focused on the unique capabilities of 3D simulations and multiuser virtual worlds. These emergent technologies augment learning in the sciences, arts and humanities by providing substantive interactions, collaborations and immersive experiences unlike any other media. Other keynotes included Linden Lab's/Second Life CEO, Ebbe Alterm, amongst others.



BSU PRESENTS RESEARCH AT INTERNATIONAL VIRTUAL REALITY CONFERENCE

IDIA Lab presented a paper on Ball State University's innovative research in virtual reality and human computer interface at the 22nd Annual Institute of Electrical and Electronics Engineers Virtual Reality Conference in Arles, France. IEEE VR2015 is part of the world's largest professional association for the advancement of technology and represents the leading international research in virtual reality. IDIA Lab's paper surveyed our research and development in multi-user virtual worlds, 3D simulation, mobile augmented reality, interactive installations, historic recreations, and our next generation teaching and learning solutions.



CHROMACHORD: A VIRTUAL MUSICAL INSTRUMENT

ChromaChord, developed by BSU IDIA Lab is a virtual musical instrument that utilizes a combination of the Oculus Rift headset and an attached Leap Motion controller to create an immersive 3D environment. The Oculus Rift provides a three-paneled visual interface, through Unity, that allows the users to access different component windows of the instrument (simply by turning their head), while the Leap Motion Controller allows the user to interact with the visual interface to musical effect (processed and generated in Max/MSP). This project was presented at IEEE 3DUI Conference in Arles, France. <http://t.co/LpsS6RPDOC>

TWEETS

- BSU IDIA Lab ArtsWalk Video Staff demonstrating projects w/ #OculusRift#Kinect #HCI #VR and #Fun !
- RT @NLTC: IDIA Lab: This interdisciplinary lab puts technology to work. @IDIA_Lab #AugmentedReality#edtech #learning #virtual
- BSU IDIA Lab develops Open Source Unity 3D based virtual world MMO platform for Mellon Foundation Consortium <http://t.co/J5mwztylHB>
- Virtual Collaboration Center: <http://t.co/Jy7eMegCUm>
- Belfast Daily features piece on BSU IDIA Lab Master Class in 3D Virtualization in Northern Ireland South West College @ bfonline: World-leading expert @jfillwalk @BallState makes case for 3D virtualization
- IDIA Lab creates 3D scanned and printed violin - playable through hand gestures
Video: <http://bit.ly/SIMviolin>
- Photogrammetry Workshop: <http://t.co/NdHmNpRill> via @YouTube

About HDT and IDIA

Hybrid Design Technologies and the Institute for Digital Intermedia Arts at Ball State University engage designers and scholars in exploring the intersections between the arts, science and technology. This interdisciplinary new media initiative investigates virtual reality, human computer interaction, visualization and 3D simulation. The labs develop projects in partnership with our international clients – connecting students to high-profile immersive investigations at the forefront of emergent media design and learning.

