

COLUMBIA MISSOURIAN

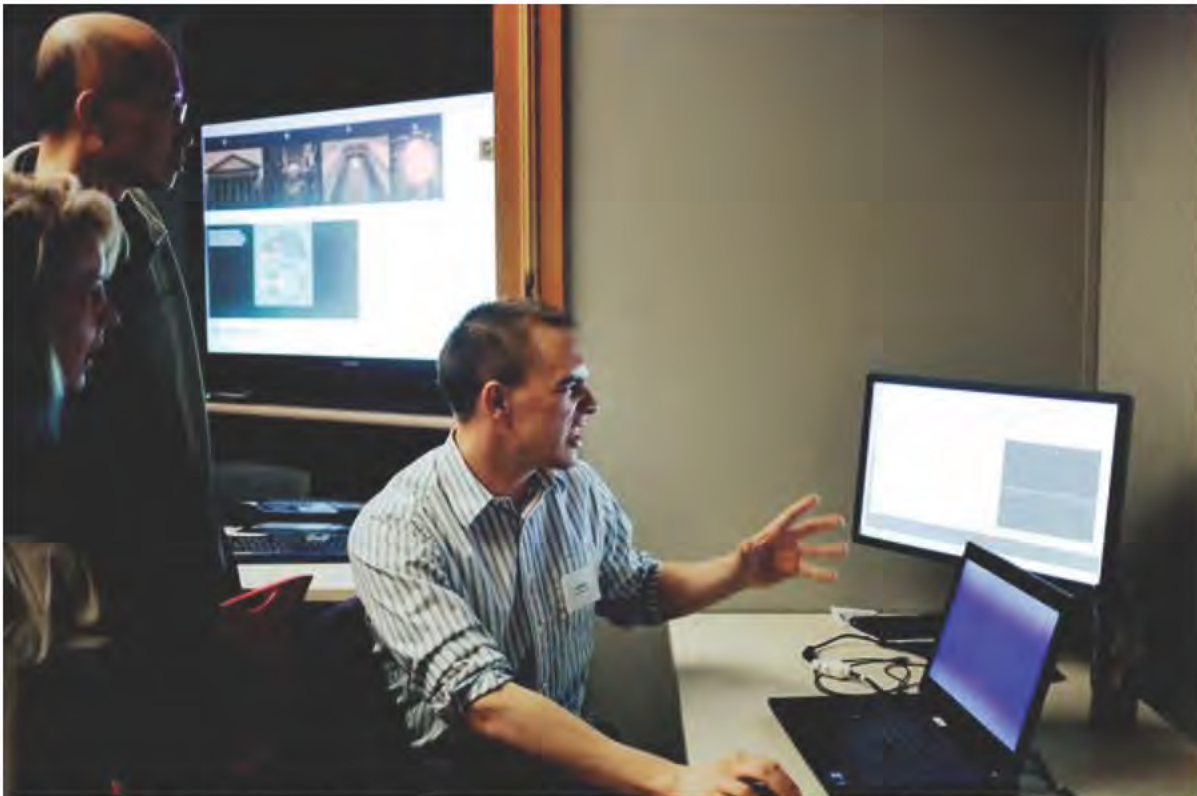
MU iLab showcases 3-D, virtual technology

By [Christa Corrigan](#)

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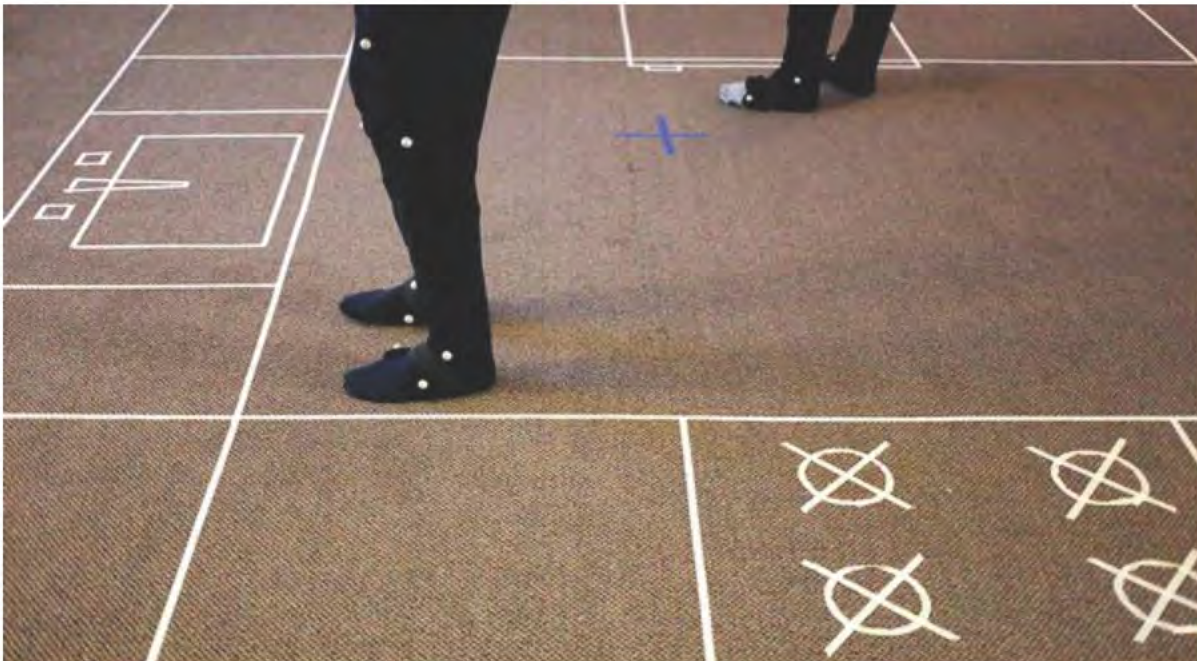
Grant Abell, a senior at MU, acts out kitchen movements for the Immersive Visualization Lab open house Friday. Abell and the other volunteers virtually prepared salads, cooked omelets and cleaned the kitchen. Abell says he doesn't cook at home. With the data gathered, the computer can simulate a wide variety of people to see how they would interact in a room before it's built. | [Sarah Rothberg](#)



Heather Schafer and Kevin Zang watch a behavioral simulation operated by James Hopfenblatt, a graduate student at MU. Friday's Immersive Visualization Lab open house showcased the 3-D software and programs used by the Department of Architectural Studies to plan buildings and scenarios, such as emergencies. | [Sarah Rothberg](#)



Heather Schafer tries the Oculus head mounted display at Friday's Immersive Visualization Lab open house held by MU's Department of Architectural Studies. The Oculus allows the viewer to see and move around a virtual building by creating a 3-D simulation. "Can you guys make this compatible with Candy Crush?" Schafer asked. | [Sarah Rothberg](#)



Mlhammed Alsubaie, left, a freshman at MU, and Grant Abell, a senior at MU, volunteer for the Immersive Visualization Lab open house on Friday. Alsubaie and Abell are architectural studies majors and volunteered for the motion capture station that simulated a small kitchen. | [Sarah Rothberg](#)

The Immersive Visualization Lab open house was held by MU's architectural studies department on Friday. Students volunteered to help showcase 3-D software and the programs used by the department in planning buildings and scenarios, such as emergencies, inside. One of the devices showcased, an Oculus head mounted display, allows the viewer to see and move around a virtual building by creating a 3-D simulation. ; [Sarah Rothberg](#)

COLUMBIA — Bimal Balakrishnan has a vision for using 3-D and virtual technology to put people in the midst of historical events like the Kennedy assassination or in the crowd of a riot continents away.

Balakrishnan is one of the creators of the Immersive Visualization Lab, or iLab, where students are experimenting with technology that makes virtually visiting such places possible.

If you go
What: Immersive Visualization Lab, or iLab, open house.
When: 3:30 to 5 p.m. Sunday.
Where: 233 Stanley Hall. Walk under the Memorial Union tower and head into what's known as white campus; Stanley Hall is connected to Gwynn hall, the first building on the south, or right, side.

The Department of Architectural Studies, which created the iLab, invited the public to visit an open house Friday and another from 3:30 to 5 p.m. Sunday. [Unveiled in December 2011](#), the lab serves as a training ground for students to experiment with virtual technology and experience their architecture designs in 3-D.

The lab's mission is to advance immersive visualization techniques, said Balakrishnan, an assistant professor of architectural studies. Immersive visualization techniques are used to make people feel like they are a part of 3-D and virtual environments — to create the high-end sensation

of "being there."

The open houses are an opportunity for people from other disciplines to see how the students are using the technology, Balakrishnan said. Anyone can come, but he said he hoped that people from other university departments, at MU and beyond, would visit with an eye for future collaborations and exchanges of ideas.

At the Friday open house, architectural studies students were set up in stations around the iLab to showcase their projects. Their equipment included motion capture technology, interactive 3-D models and virtual reality systems such as Oculus headsets.

'You are in the building'

Oculus headsets, more commonly used with video game software, were set up for people to try on. With the headset on, people looked at a computer monitor to experience a virtual walk-through of a Gandhi memorial museum in India. The museum was digitally replicated by an architectural studies graduate student.

The headset tracks head movements creating an authentic, virtual tour of the museum — even Gandhi's portrait on one of the walls is visible.

"People say the Oculus can be disorienting because you really feel like you are in the building," said Rachael Liberty, an undergraduate in architectural studies who was showing visitors how the technology works.

The graphics viewed through the Oculus headset were slightly fuzzy, but students said they will receive an updated version this summer. The equipment will make the graphics appear much clearer and more detailed, they said..

The Oculus equipment is only available for software developers, but because the brand was recently purchased by Facebook, the students think the equipment will become available for consumer purchase in the near future.

Students see the equipment drastically changing the scope of technology development.

"You had the Internet, then mobile, and now the next major platform is going to be virtual reality," said Michael Lam, a graduate student in architectural studies.

'A library of movement'

In another part of the iLab, students dressed in black motion capture suits moved around on a grid. They were demonstrating how one might move around a kitchen. A 12-camera system captured the movements, which were interpreted by a computer software program.

The equipment is used by the entertainment industry to create digitally animated movies like "Avatar." Benjamin Schrimpf, an undergraduate student in architectural studies, said the iLab's motion capture gear isn't quite as expensive as what the movie industry uses, but it's the same basic software.

In the iLab, motion capture is used to replicate the movement of humans and create digitally animated 3-D characters, which are then inserted into the 3-D building models. This helps students visualize how a human being might move around in the interiors of a building before it's constructed, Schrimpf said.

He said they are creating movements based on different scenarios, such as if a person has physical disabilities.

"The intention is to create a library of movement," Schrimpf said.

A recent experiment used the animated characters in a building model to demonstrate a nurse catheterizing a patient.

Josh Fraser, a doctoral candidate in computer science, said he came to the open house to check out the motion capture equipment. Fraser teaches two computer modeling and animation classes and said motion capture would be a useful tool for his students' animated short films.

'What if' games

The iLab students are also researching how motion capture data can simulate human behavior to create intelligent "agents." These agents are more of an advanced version of the digitally animated characters and have an "intelligence" that powers their behavior, which is programmed using computer software.

Using the software, the students can make the digital agents replicate human reactions to certain events. For example, students can see how easily the animated characters could evacuate a building if there were a fire.

"We've been wishfully simulating the geometry of the space and the look and feel of it, but for any space to be successful, it depends on how well it can afford human behavior," Balakrishnan said.

He said such experiments are useful in examining how humans might react in crisis situations.

"We design buildings and we meet the code (with fire escapes and similar requirements) ... but we don't know how a crowd would behave in a situation," he said. "So with some of those things, we can play 'what if' kinds of games."

James Hopfenblatt, an architectural studies graduate student, has spent much of the year researching behavioral simulation and mastering software to develop the intelligent agents.

Hopfenblatt's next stage in his experiment will be inserting the intelligent agents into a virtual model of adjoining Stanley and Gwynn halls. The iLab is in Stanley Hall.

"This building has a lot of potential to study for a crisis situation," he said.

Possibilities of collaboration

Balakrishnan said that since the iLab opened, students have continually researched new uses for the equipment — and looked for collaborative opportunities.

So far, the iLab has partnered with disciplines such as astrophysics and textile and apparel management. With the Department of Textile and Apparel Management, the iLab's technology was used to create virtual models of clothing designs fitted on digital human models.

"There are a lot of possibilities," he said. "And personally what I would like to see is a lot more."

Balakrishnan said a proposal for a partnership with the Missouri School of Journalism would look at how immersive technology could be a tool for news dissemination by allowing audiences to experience real-world events in 3-D.

"What would the news experience of the future look like?" he said. "We are used to seeing it on a screen, but imagine if it was much more immersive."

Supervising editor is [Elizabeth Brixey](#).