



Oct 11- Oct 17, 2009

LSU College of Art & Design Teams Up with CCT to Create High-Tech Science Learning Device

Source: LSU School of Art

In one of the most unique collaborative efforts on the LSU campus, students and faculty from the College of Art & Design have teamed up with researchers in the CCT and the LSU Department of Computer Science to produce a tangible interaction kiosk that will help middle school students learn about science in a whole new way.

If “tangible interaction kiosk” is too much of a mouthful, call it the science portal project. Either way, it’s a large console with a high-tech interface that allows multiple users to simultaneously engage in learning through a variety of interactive media tools. Thus far, the prototype that has been constructed is configured to teach middle school students about science, but the basic concept can easily be tailored for any user interested in any subject.

“This project is really exciting because it brings the arts together with technology, working side by side,” said Rod Parker, director of the LSU School of Art. “It’s really the embodiment of the university’s AVATAR initiative.”

AVATAR — short for Arts, Visualization, Advanced Technologies and Research — is a multi-disciplinary hiring initiative that is designed to bring together several academic departments in an effort to create a multi-disciplinary research and teaching environment in the field of digital art.

The science portal project certainly falls within the scope of the AVATAR mission. It’s the result of a joint effort between Parker and LSU Department of Computer Science Assistant Professor Brygg Ullmer, who holds a joint faculty appointment with the CCT. Together, the two have received two grants to further their collaboration – one for \$150,000 from the Louisiana Board of Regents, and the other for \$200,000 from the National Science Foundation.

The Board of Regents grant charged Parker and Ullmer with designing a creative way to connect middle school classrooms to the Laser Interferometer Gravitational-Wave Observatory, or LIGO, Science and Education Center in Livingston Parish. LIGO is a world-class facility dedicated to the detection and measurement of cosmic gravitational waves. Even for the casual observer, the LIGO facility in Livingston is remarkable, including two L-shaped arms, each 2.5 miles in length. It is available for use by the world

scientific community, and is a vital member in a developing global network of gravitational wave observatories. Only two LIGO facilities exist in the United States — with the other in Washington state. Equally important to Louisianans, the LIGO Science Education Center offers dozens of hands-on science exhibits, which are visited each year by thousands of Louisiana students.

Building on the center's educational impact, the Board of Regents has been cultivating innovative ways of engaging Louisiana middle school students considered to be the "at-risk" population in K-12 science education, for use both at the center and in their own schools.

The science portal project does that by serving as an experiential learning tool. Ullmer's team of undergraduate and graduate students, working in his laboratory at CCT, led the technology design while Parker's students in the Graphic Design Student Organization collaborated in developing the physical and visual user interface and screen designs. The result of their collaboration is a kiosk that resembles a large video arcade game. Users stand at the portal and manipulate innovative devices, including cartouches — physical tiles embedded with electronic RFID tags — and custom electronics first developed at LSU for professional scientists. These allow students to move between several different interfaces that bring to life interactive games, videos, quizzes and fact sheets on a variety of scientific topics.

So far, the team of students has constructed one kiosk, but the project is going so well, the researchers plan to build several others during the course of the academic year. They plan to unveil a first machine at LIGO in October, and later install them in key middle schools around the state early next year.

While the Board of Regents funding included relatively limited support for graphic and product designers, the NSF grant is offering equal support for both Parker and Ullmer's students. It charged Parker and Ullmer with finding ways of training their own students to be skilled in both design and technology, and to better integrate the skills and knowledge that come from both disciplines. The science portal project offered a perfect example of that kind of cross-disciplinary collaboration, so the team is using the NSF funding to continue their work throughout the year.

Where it will lead is anyone's guess, but Parker and Ullmer are enthusiastic. They see the science portal project as just the first application of a new kind of richly physical and visual interactive learning tool with unlimited possibilities. They're also excited about the experience that LSU students both on the technology and the design side of the project are coming away with as they work together in this emerging field.

"Together, we're training a generation of students who are able to see, think and act with the perspectives of designers, scientists and technical engineers," Ullmer said. "They will be comfortable spanning both ends of the arts and technology spectrum, letting them stand out with skills second to none amidst today's new digital economies."

Pats on the Back:

- Professor Thomas Sterling was invited to give three talks at three separate events recently. He gave an invited presentation at the IDC HPC User Forum at the Stuttgart High Performance Computing Center in Stuttgart, Germany; presented an invited seminar at the University of Maryland Center of Scientific Computation and Mathematical Modeling in College Park, Maryland; and gave the keynote address at the 22nd International Workshop on Languages and Compilers for Parallel Computing at the Trabant University Center at University of Delaware in Newark, Delaware.
- Christopher White received a supplement of \$16,000 for the project "Ubiquitous Computing and Monitoring System (UCoMS) for Discovery and Management of Energy Resources" from the Department of Energy. The supplement will be used to purchase equipment to accelerate and improve the closed-loop experiment.

CCT in the News:

- University adds \$215K supercomputer to Frey Center
Source: The Daily Reveille
<http://www.lsureveille.com/news/university-adds-215k-supercomputer-to-frey-center-1.1938290>
- LSU Takes Video Game Design Class to the Next Level
Source: WCET Frontiers
<http://wcet.informz.net/admin31/content/template.asp?sid=5411&ptid=55&brandid=4147&uid=-1&mi=466629>

Lectures This Week:

- The Department of Electrical and Computer Engineering Research Seminar Series Presents "Wireless Network-on-Chip: A New Communication Paradigm for Gigascale Heterogeneous MCMs" by Danella Zhao, Ph.D., Assistant Professor, Center for Advanced Computer Studies, University of Louisiana at Lafayette. The lecture will be Wednesday, Oct. 14 from 2-3 p.m. in 117 Electrical Engineering Building.
- Xin Li, Assistant Professor at CCT and Electrical and Computer Engineering, will organize this year's CCT Colloquium Series. He is working hard to put together an interesting program for the coming year and would appreciate any input or suggestions. Feel free to contact Xin at xinli@cct.lsu.edu.

Please Note:

- Future ALL CCT meetings for the Fall 2009 semester will take place Oct. 21, Nov. 11 and Dec. 16. All meetings are at 3 p.m. in Johnston 338 unless otherwise announced. Please make every effort to attend these important meetings.
- There will be an HPC training titled "Introduction to Gaussian" on Thursday, Oct. 15

from 1:30 to 3:30 p.m. in 338 Johnston and on the Access Grid. For more information, or to register, please visit:

<http://www.hpc.lsu.edu/training/tutorials/index.php#fall09gaussian>

- There will be a LONI HPC workshop on Oct. 26th and 27th hosted by University of Louisiana at Lafayette in Lafayette.
- Registration is now open for the Supercomputing 2009 Education Program at the conference in Portland, which will take place Nov. 14-17. The Education Program helps educators and students learn more about computational science topics and gives educators ideas to bring these topics into their classrooms. The program is open to undergraduate faculty, undergraduate and graduate students, and high school teachers. To register or for more information, please visit <http://computationalscience.org/sc09>.
- Please remember to send your news concerning grants, awards, conferences, or other pertinent information that should be communicated to CCT to PR Manager Kristen Sunde at ksunde@cct.lsu.edu.

Upcoming Grant Deadlines:

Note: Please see the CCT deadline Web site, as many NSF deadlines are listed here:

<http://www.cct.lsu.edu/about/grants/deadlines/events.php>

- CreativeIT
October 13 2009 10:00 a.m.
A portion Of \$7,000,000.00 available
http://www.nsf.gov/pubs/2009/nsf09572/nsf09572.htm?govDel=USNSF_25
- EPSCoR Research Infrastructure Improvement Program: Track-1 (RII Track-1)
October 19 2009 10:00 am
At Most \$ 4,000,000.00 available
http://www.nsf.gov/pubs/2009/nsf09570/nsf09570.htm?govDel=USNSF_25
- EPSCoR Research Infrastructure Improvement Program: Track-2 (RII Track-2)
November 18 2009 10:00 am
At Most \$ 2,000,000.00 available
http://www.nsf.gov/pubs/2009/nsf09571/nsf09571.htm?govDel=USNSF_25