



**Feb. 1 – 7, 2009**

### **LSU Visualization Lab Helps University Researchers See Their Data in New and Exciting Ways, from Underwater to Outer Space**

A virtual underwater environment in Second Life. A new, high-resolution video of neutron stars colliding. A 3-D movie of Hurricane Gustav's wind field that impacted coastal Louisiana and Baton Rouge. Live, streaming video to show elementary students the creepy crawlies that live on their skin and in their hair.

What do these seemingly unrelated projects have in common? They are all initiatives LSU faculty conducted using the University's Tier 2 Visualization Laboratory, located on the third floor of the Fred C. Frey Computing Services Center.

The CCT operates this laboratory as a resource for faculty across the LSU campus who need advanced visualization assistance. The laboratory features a large-scale visualization wall to project images. Faculty from any discipline can use the laboratory to collaborate with researchers who have experience in advanced scientific visualization.

The CCT's Visualization Consultant, Jinghua Ge, spent the past semester assisting faculty from disciplines including elementary education, physics, coastal studies and engineering with different projects.

"These services offer LSU faculty a new way to look at their data and develop solutions and models they could not do with traditional methods," Ge said. "In the coming semester, I look forward to meeting with faculty from disciplines across the campus to let them know more about this exciting resource and to show them how they can use scientific visualization to benefit their projects."

One project Ge worked on this semester was an initiative between CCT and the Department of Education to develop new ways of teaching science and technology to K-12 students. Using data from coastal studies, environmental engineering and basic sciences, Ge and graduate students working in the Tier 2 Visualization Laboratory created an underwater environment in Second Life. LSU has an island in Second Life, and the underwater space allows students to go there and experience an immersive ocean area. The students can manipulate weather data in this environment to see how different elements affect ocean life.

In another project, students of all ages can see highly magnified images of tiny, living

organisms that thrive in Louisiana waters with a live visual stream from "Scope-On-A-Rope," an LSU-developed hand-held analog microscope from the lab of Cindy Henk, Research Associate Manager of the Socolofsky Microscopy Center in the Department of Biological Sciences. Ge and one of the lab's undergraduate student workers, Kevin Kolz, worked with Henk to create a live streaming process for this data. As students use the microscope, they can acquire images, which Ge set up to show live in Second Life. This way, students can go to the Second Life site and see live microscope images of microbes as the Scope-On-A-Rope is being used.

Ge also worked with LSU Department of Physics & Astronomy Professor Joel Tohline to better visualize his data of merging binary stars. Tohline already had conducted a movie simulation of this violent merger, but by collaborating with Ge, whose programming skills significantly enhanced the capabilities of an open-source visualization tool called VisTrails, he was able to analyze complex aspects of the merger in considerably more quantitative detail than had previously been possible.

Professor Q. Jim Chen, from the Department of Civil and Environmental Engineering, used the laboratory to create a 3-D film of Hurricane Gustav, which hit Baton Rouge on Sept. 1, 2008. Chen's research group developed a wind dataset for a 51-hour period during Hurricane Gustav and used the wind field to drive their storm surge and wave models. Ge helped the group visualize these data to create a 3-D model that allows better and more in-depth analysis of the storm.

"Hurricanes are just one example of how scientific visualization is enabling breakthroughs that were not possible just a few years ago," Ge said. "Using these techniques, scientists can create more advanced models that take multiple elements into account, such as wind speed, storm surge, and ocean waves, as well as the resultant coastal erosion and sediment deposition. These models help them study hurricanes more effectively, and in the future, this could lead them to develop better and more accurate early warning systems."

For more information on the Tier 2 Visualization Laboratory, please visit <http://www.cct.lsu.edu/avsl>. Also, CCT and ITS have visualization consultants available in Middleton Library who can meet with LSU faculty, staff and students to let them know how they can take advantage of these services.

Users who already have Second Life installed can get a free avatar to explore the LSU Virtual Campus and see the visualization projects ongoing at: <http://slurl.com/secondlife/LSU%20CCT/212/184/22>.

#### **CCT in the News:**

- **LSU Professor Receives National Science Foundation's Prestigious CAREER Award**  
BATON ROUGE – Tevfik Kosar, a professor in the LSU Department of Computer Science, has received the National Science Foundation's CAREER

Award. The NSF CAREER Award is the foundation's most prestigious award for junior faculty members. It is part of NSF's Faculty Early Career Development Program, which "recognizes and supports the early career-development activities of those teacher-scholars who are most likely to become the academic leaders of the 21st century." CAREER Award recipients are selected on the basis of creative career-development plans that effectively integrate research and education within the context of the missions of their institutions.

<http://www.cct.lsu.edu/site.php?pageID=63&newsID=940>

- **Disney Sneak Peeks Princess and The Frog at Red Stick Preview**

Source: [AWN Animation Blog](#)

Back in the pre-digital, pre-xerographic days of Disney animation, the Ink and Paint department was responsible for tracing the animators' pencil drawings onto acetate cells and filling those transparent images with color. Technological advances rendered hand inking and painting a thing of the past, but the name lived on in 1988's *Who Framed Roger Rabbit* as the Ink and Paint Club, an after-hours honky-tonk where the 'toons' entertained Hollywood bigwigs.

<http://events.animationblogspot.com/2009/01/27/princess-and-the-frog-preview/>

- **Workshop addresses coastal resiliency needs**

Source: LSU Public Affairs

BATON ROUGE – Experts from around the world gathered Jan. 20-21 on the LSU campus to take part in a workshop looking to improve the technology of coastal inundation prediction for the needs of emergency managers and regional planners.

<http://www.cct.lsu.edu/site.php?pageID=63&newsID=942>

### **Pats On The Back:**

- The NINJA project, which includes CCT scientists Peter Diener and Erik Schnetter, is a collaborative effort among members of the numerical relativity and gravitational-wave data analysis communities. This project, published its first e-print "Testing gravitational-wave searches with numerical relativity waveforms: Results from the first Numerical INJection Analysis (NINJA) project" <<http://arxiv.org/abs/0901.4399>>.
- Jorge Pullin was selected by the International Society on General Relativity and Gravitation to chair the committee that chooses the winner of the Basilis Xanthopoulos prize. This international prize is the most prestigious in gravitational physics for candidates younger than 40. It is awarded every three years and consists of \$10,000. It is funded by the Foundation for Research and Technology - Hellas (FORTH) of Greece. The award is given to a scientist for outstanding (preferably theoretical) work in gravitational physics. At the time of the nomination deadline, the candidate should be younger than 40, or with no

more than 12 years of research experience following his or her Ph.D. Pullin will oversee the international group that will accept nominations and select a recipient.

- Brygg Ullmer, CCT and LSU Department of Computer Science, was the Flagship Faculty profile in the Jan. 30 edition of LSU Today.
- The Cactus Computational Toolkit workgroup announces Cactus 4.0 beta 16, the next stable version of Cactus. This release contains many features and improvements that were designed, implemented or contributed over the past four years, and it supports several new system architectures. The Cactus group has also updated the documentation and made it more complete. More information online at: <http://www.cactuscode.org>.

### **Upcoming Lectures:**

- Richard D. Loft from the National Center for Atmospheric Research will lecture as part of the CCT Colloquium Series on Feb. 6 at 11 a.m. The lecture will take place in 338 Johnston.

### **Please Note:**

- The next training seminar will be Wednesday, Feb. 4 from 10 a.m. to noon in Johnston 338. This training is for users that would like to learn the basics of MPI concepts and calls. To register visit: <http://hpc.lsu.edu/training/tutorials/#spring09mpi1> .
- Abstracts for Computational Science Poster Day are due on Thursday, Feb. 12! This activity is open to all undergraduate students in Louisiana. Computational Science Poster Day is an initiative of faculty working on CyberTools. There is no fee to submit work or attend the Computational Science Poster Day. Students who wish to participate should submit an abstract describing their research questions/purpose, methods and outcomes (actual or anticipated) by Feb. 12. The committee invites posters on all topics related to computational science, including cyberinfrastructure, computer architecture, supercomputing and its related tools and technologies, basic science applications, and more! (Full details on submissions can be found at [www.cct.lsu.edu/posterday09](http://www.cct.lsu.edu/posterday09).) Abstracts should be submitted to: Kathy Traxler, LSU CCT, 216 Johnston Hall, Baton Rouge, LA 70803, or by e-mail: [ktraxler@cct.lsu.edu](mailto:ktraxler@cct.lsu.edu). For more information on Computational Science Poster Day, please visit <http://www.cct.lsu.edu/posterday09>.
- ALL CCT meetings of the Spring 2009 semester will take place Wednesdays at 3 p.m. in Johnston 338. If you have any information, news or announcements you wish to include at the meeting, please notify Karen Jones, [kjones@cct.lsu.edu](mailto:kjones@cct.lsu.edu). ALL CCT meetings for this semester are scheduled for Feb. 11, March 18, April 15 and May 20. Please make every effort to attend.

- The 2009 CCT security badges are now ready to be picked up. They can be picked up in my cube Frey 200 C1C.
- CCT is accepting applications from high schools to attend the CyberTools Boot Camp (July 6-10, 2009). If you have worked with Louisiana high school students and know of a school, teacher or students who might be interested, please notify Kathy Traxler, [ktraxler@cct.lsu.edu](mailto:ktraxler@cct.lsu.edu). More information about the camp is available online at: <http://www.cct.lsu.edu/CyberToolsCamp09>
- If you have any news for the CCT Weekly, please e-mail PR Manager Kristen Sunde directly at [ksunde@cct.lsu.edu](mailto: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>

RFP--Amendment--Defense Sciences Research and Technology  
 February 16 2010 10:00 am

<https://www.fbo.gov/spg/ODA/DARPA/CMO/BAA07-21/listing.html>

RFP--Amendment--Communications and Networking Technology  
 ONR-BAA-07-012

February 16 2010 10:00 am

[https://www.fbo.gov/index?s=opportunity&mode=form&id=da7a0376fc5b9f2ffae2f66dd64b07dd&tab=core&\\_cvview=1](https://www.fbo.gov/index?s=opportunity&mode=form&id=da7a0376fc5b9f2ffae2f66dd64b07dd&tab=core&_cvview=1)

Cyber-Physical Systems (CPS)

February 24 2009 10:00 am

At Most \$ 5,000,000.00 available

[http://www.nsf.gov/pubs/2008/nsf08611/nsf08611.htm?govDel=USNSF\\_30](http://www.nsf.gov/pubs/2008/nsf08611/nsf08611.htm?govDel=USNSF_30)