



November 16 – 22, 2008

CCT to Demonstrate Innovative University Research at Supercomputing 2008

CCT researchers will showcase University research that applies computational science in unique and dynamic ways to different areas of academia during the annual Supercomputing Conference in Austin, Texas.

CCT will host a booth at the conference, which lasts Nov. 15-21, to showcase different projects underway at CCT and other departments at LSU that use the advanced cyberinfrastructure available on campus. LSU projects for Supercomputing Conference 2008 relate to the booth theme, “Advancing Society Through Computation & Technology.”

“Supercomputing Conference gives us a chance to exhibit LSU research alongside other universities from around the country and the world, showing that we are a leader in applying high-performance computing, cyberinfrastructure, emerging technologies and software to solve complex problems in disciplines from astrophysics to the arts,” said CCT Interim Director Stephen David Beck. “While here, we can also learn about the latest trends in the industry and look for opportunities to collaborate with partners on new and exciting projects.”

CCT will highlight CyberTools, a National Science Foundation-funded collaboration among faculty from nine Louisiana universities to develop unique work packages and applications that will further advances in science and engineering research while allowing scientists to use advanced cyberinfrastructure more effectively. Gabrielle Allen, a professor with CCT and LSU’s Department of Computer Science, serves as principal investigator on the CyberTools project.

The booth also will feature information on Louisiana’s integration onto the TeraGrid, a backbone of national cyberinfrastructure through the Louisiana Optical Network Initiative, or LONI. LONI Executive Director Charlie McMahon will attend Supercomputing 2008 to give information on LONI and its activities on TeraGrid.

Daniel S. Katz, a professor with the Department of Electrical and Computer Engineering who also is the National Science Foundation’s TeraGrid Grid Infrastructure Group Director of Science and oversees the Cyberinfrastructure Development division within CCT, which conducts research and work relating to TeraGrid, will talk about TeraGrid and its mission. TeraGrid incorporates supercomputing resources from 11 partner sites

around the country, and LONI became the newest TeraGrid member in late 2007, accepting the first users in February 2008.

CCT Executive Director Jarek Nabrzyski will give a talk on the LONI Institute, a collaboration of researchers among the six LONI sites that creates a multi-disciplinary environment, with CCT as its central hub. Each university is in the process of hiring two new faculty members and one new computational scientist, who will work as members of the virtual institute. This research collaborative will significantly enhance Louisiana's scientific and economic development capacity. LONI Institute is funded through the Louisiana Board of Regents' Post-Katrina Support Fund Initiative, as well as from matching funds from all universities involved. Total funding for the LONI Institute is \$15 million.

CCT faculty working with Professor Thomas Sterling, CCT and LSU Department of Computer Science, will give information on ParalleX, a next-generation model for parallel computing. The ParalleX research group is investigating advanced parallel computer architecture and programming environments to eliminate constraints and program petascale-class machines in ways that incorporate multiple elements effectively. ParalleX is designed to make areas such as synchronization, scheduling, manual data layout and messaging more efficient for researchers.

Beck will discuss the University's AVATAR: Arts, Visualization, Advanced Technologies and Research Initiative, which seeks to develop curricula in digital media and recruit up to 12 new faculty members who specialize in this area to LSU. Beck, who is a professor in the LSU School of Music, is one of the faculty members who developed the AVATAR initiative on campus.

CCT researchers Erik Schnetter and Steve Brandt will conduct a 3-D simulation of two black holes colliding in a large-scale computing demonstration of the Cactus Computational Toolkit. They will conduct this simulation on 5,832 cores using the Supercomputing Conference supercomputer, SICORTEX, and the demonstration is expected to run at about a Teraflop of sustained computing power. This will be one of the largest simulations taking place at the conference.

Other projects CCT faculty and staff will showcase include computer science Professor Tevfik Kosar's PetaShare project, a National Science Foundation-sponsored effort to build a distributed data archival, analysis and visualization infrastructure for data-intensive, collaborative research and a talk on advanced computer graphics and geometric modeling.

To view a complete schedule of LSU demonstrations taking place at Supercomputing Conference 2008, please visit https://wiki.cct.lsu.edu/sc/pages/Main_Page.

Pats On The Back:

- Jorge Pullin was named to the General Council of American Physical Society, or APS, the country's leading professional organization of physicists.

- Baton Rouge Business Report has selected Brygg Ullmer as one of its 2008 "40 Under 40" honorees. This annual contest acknowledges people in the Baton Rouge area who are making important contributions to advance education, economic development and industry. Brygg was nominated for his research expertise in tangible and embedded interaction, computational applications for biological science and also for his education and outreach efforts with local students in the K-12 grades as well as his own students at LSU. Baton Rouge Business Report will feature an article on Brygg and his accomplishments in the Nov. 18 edition.
- Ram Ramanujam received a National Science Foundation Grant titled "An Effective Automatic Parallization Framework for Multi-Core Architectures," funded at \$250,000 over a three-year period. Ram served as PI for this grant award.
- Jarek Nabrzyski was appointed by Brooks Keel as a voting board member in the Great Lakes Consortium for Petascale Computation to represent LSU. The consortium facilitates the widespread and effective use of petascale computing through the development of new computing software, applications and technologies. The consortium also is working on Blue Waters, the National Science Foundation's first sustained petascale supercomputer, which will deploy at NCSA in 2011.
- Congratulations to SAGA and GridChem, both CCT projects, which were described and referenced to in the latest issue of IEEE Computer. Two of the five articles in this issue mentioned these CCT initiatives.

CCT in the News:

Jorge Pullin Named to Council of American Physical Society

Source: LSU Office of Public Affairs

BATON ROUGE – Jorge Pullin, Horace C. Hearne Jr. Professor of Physics & Astronomy and interim co-director of the Center for Computation and Technology, or CCT, at LSU, was recently named to the General Council of the American Physical Society, or APS, the leading professional organization of physicists.

<http://appl003.lsu.edu/UNV002.nsf/PressReleases/PR5257?OpenDocument>

Upcoming Lectures:

- Nicolas Gonzalez will be a special guest lecturer at 4:30 p.m. on Monday, Nov. 24 in Johnston 338 on "SIGGRAPH Student Volunteer Recruiting Opportunities." Gonzalez is the SIGGRAPH 2009 Student Volunteers Chair, and he will be talk to students about the benefits of taking part in the conference.

- Robert M. Kirby will speak as a part of the Computational Mathematics Seminar Series on “Visualization of High-Order Finite Element Methods” on Monday, Dec. 1 at 10:30 a.m. in Johnston 338. Kirby also will lecture on Tuesday, Dec. 2, at 2 p.m. in Johnston 338 on “Building Symbiotic Relationships Between Formal Verification and High Performance Computing”.

Please Note:

- **Attention NERSC users:** The Luis W. Alvarez Fellowship in Computational Science allows recent graduates with a Ph.D. (or equivalent) with a strong emphasis on computing or computational science to acquire further scientific training at Berkeley Lab. The application deadline is December 2, 2008. See: <http://www.lbl.gov/CS/html/alvarez.html> for more details.
- The LSU Center for Computation and Technology, or CCT, and the AVATAR: Arts, Visualization, Advanced Technologies and Research Initiative will host a meeting on Monday, Nov. 24 for faculty and students interested in volunteering with SIGGRAPH: the Association for Computing Machinery's Special Interest Group on Graphics and Interactive Techniques. The meeting will take place at 4:30 p.m. in Johnston Room 338, and refreshments will be provided.
- If you plan to attend the CCT holiday lunch on Tuesday, Dec. 2 at Mike Anderson's, please drop off cash or check (made out to Debra Waters) in 309 Johnston. The final day to pay to attend the event will be Wednesday, Nov. 26. Remember to indicate what meal you would like and mention if you would like dessert.
- CCT is currently accepting applications from high schools to attend the CyberTools Boot Camp (July 6-10, 2009). Five schools will get to attend, and each can send five students and one teacher to the camp. The camp is free, but schools must provide their own lodging. CCT can assist schools with making lodging arrangements on campus. 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. 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.

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>

Cyber-Enabled Discovery and Innovation (CDI)

November 21 2008 10:00 am

At Least \$ 26,000,000.00 available

http://www.nsf.gov/pubs/2008/nsf08604/nsf08604.htm?govDel=USNSF_25

Major Research Instrumentation Program (MRI)

January 19 2009 10:00 am

At Most \$ 4,000,000.00 available

http://www.nsf.gov/pubs/2009/nsf09502/nsf09502.htm?govDel=USNSF_25