TACC Takes Visualization Training on the Road

Collaboration with Southeastern University Research Association provides visualization workshops to minority serving institutions

Faculty and students attend a visualization training workshop at Norfolk State University.

Not every college and university in the U.S. has its own computational cluster. This, in part, was the impetus for the National Science Foundation's TeraGrid project: to offer advanced computing resources to researchers all across the country, no matter how large or small their institution.

The annual TeraGrid (TG) conference, the Campus Champion program, and the education, outreach and training efforts developed by resource providers are just a few ways that TeraGrid brings scientists and students into the fold.

However, sometimes these programs are not enough to get researchers involved. Sometimes, you have to bring resources – human and technological – to the researchers on their home turf.

This was the idea behind a unique collaboration between the Texas Advanced Computing Center (TACC) and the Southeastern University Research Association (SURA), a consortium of more than 60 universities working to advance and exploit the transformative nature of information technology on the regional, national and international fronts.

The Southeast region is home to nearly all of the nation's Historically Black Colleges and Universities (HBCUs) and a large percentage of its minority serving institutions (MSIs). The individuals who work and study at these institutions are sometimes underserved by the national science community, so the Texas Advanced Computing Center (TACC) and SURA reached out to these schools to share knowledge and recruit new users.

Over the course of the last year, as part of an Extreme Digital (XD) Visualization grant from the National Science Foundation, TACC and SURA presented training sessions

at SURA member institutions. Workshop locations included Norfolk State University (an HBCU), the University of Central Florida, University of Miami, and SURA offices in Washington, DC. In addition to attendees from host institutions, the faculty-student research teams from Florida A & M University, Howard University, and Morgan State University attended the workshops as well.

Karla Vega, a research engineer at TACC, teaches the class about data formats.

"The bulk of the people that come to the workshops have had zero or very nominal exposure to TeraGrid," said Linda Akli, program manager of IT Initiatives for SURA and the organizer of the workshops.

Through the workshops, and others at The University of Texas, TACC staff members taught more than 200 faculty researchers and students the basics of scientific visualization, which transforms data into images and animations that can be interpreted to derive insights.
"Visualization is a very important tool for science and engineering, but a lot of scientists and engineers have no visualization background, or are even aware of what's capable with visualization," said Dan Majchrzak, director of research computing at the University of South Florida. "The trainings informed the community at large about what's available in the TeraGrid and how it's used."

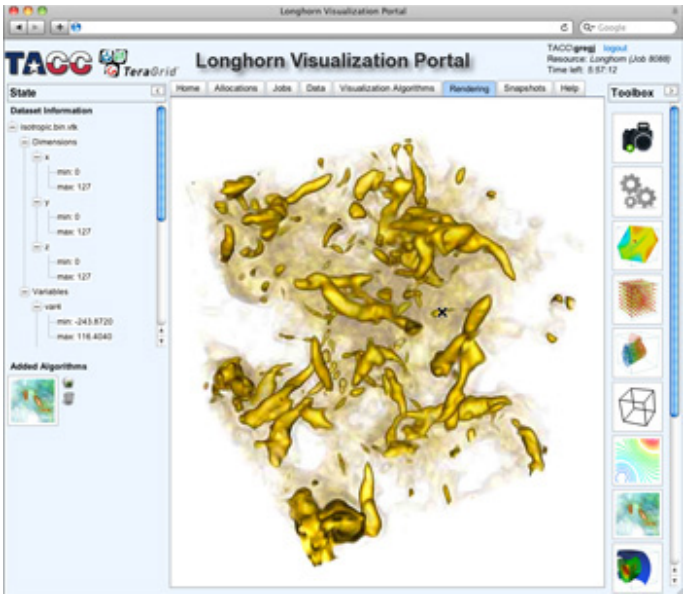
Participants learned how to operate some of the most common scientific visualization software (including Paraview and VisIt), how to get an allocation on the TeraGrid, and how to access the Longhorn Visualization Portal, a website that lets scientist visualize massive datasets from the comfort of their office.

"We're teaching them to use the tools and apply them to their research," said Greg P. Johnson, a visualization expert at TACC and one of the workshop trainers. "Attendees were able to get visual results and interact with their data to form new insights."

Importantly, the workshops dovetail with the emerging ability to perform visualization remotely, which is an increasingly important capability supported by the National Science Foundation.

"For classes, for teaching, and for giving talks, you want to go to a place where you have the 3D, tiled display and high-end visualization hardware," Majchrzak said. "But researchers also want to be able to dump in their data, get the visualization out, and analyze it at their desk."

In-person training paired with one-on-one consulting and remote access to powerful resources made it easy for new users to begin to take advantage of the computing tools available through the TeraGrid. The leadership behind the follow-on to TeraGrid, the Extreme Science and Engineering Discovery Environment (XSEDE), expects this access to be even easier in the new program.



The Longhorn Visualization Portal allows researchers with little visualization experience to apply a full set of visualization methods through a simple wizard-based interface and visualize their data remotely.

"If we're not bringing in more folks from diverse and underrepresented communities, we're not going to have much of a scientific and technological workforce," Akli said. "There's an untapped pool of talent and it's critical to get them engaged if we're going to continue to have leadership in innovation and technology."

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