Getting Their Foot in the Door

Students at the annual TeraGrid conferences participate in the full life of the conference, from tutorials and poster presentations, to conference support and programming competitions.
The Open Science Grid and TeraGrid Student Program welcomes high school, undergraduate and graduate students, exposing them to a myriad of opportunities.

Some students are old hands at the professional conference circuit. Others, however, have had less exposure to what is a significant part of many science, technology, engineering, and mathematics (STEM) careers. In 2009 and 2010, the TeraGrid Student Program, in conjunction with the Open Science Grid (OSG), catered to both the experienced and the inexperienced student.

Through the program, more than 250 high school, undergraduate, and graduate students have been immersed in the computational science and engineering community. The ultimate goal is to motivate them to pursue STEM education and professional careers and to advance scientific discovery.

“Someone, somewhere has to give them this opportunity to see what a career in computational science might look like, and TeraGrid is a very welcoming community,” says Laura McGinnis, Manager of Education, Outreach, and Training at the Pittsburgh Supercomputing Center and Chair of the TeraGrid Student Program.

“We wanted to give these students a gentle introduction to what a national conference is like. It lets them see science and engineering in action. And it gives them life experience, such as checking into a hotel by themselves or flying for the first time,” McGinnis says.

In 2009, 140 students attended the TeraGrid conference in Arlington, Virginia. In 2010, 110 students came to Pittsburgh, Pennsylvania for TeraGrid ’10, seventeen of whom also participated in the OSG Summer School that took place prior to the TeraGrid conference.

“We concentrated on providing an abundance of high-quality hands-on learning activities,” said Tim Cartwright, who led the team that organized the OSG Summer School, speaking to International Science Grid This Week. “The ultimate goal was to give students the ability to apply the conference lessons directly to their own research projects. And already, we are hearing back from students who are doing just that.”

Throughout the TeraGrid conference, student attendees volunteer to help with conference logistical needs and attend the professional science, technology, and education presentations that are part of the event. A day’s worth of tutorials are tailored specifically to students’ interests and their particular skill levels. “The TeraGrid conference exposed me to cutting-edge research being conducted on high-end machines and I expect to use the information gained from this experience to further my academic career. The Student Program allowed me to meet students from other disciplines, but with a common high performance computing interest and the mentor program teamed students with experts to offer guidance and support, which was another valuable experience,” said Eric Shook of the University of Illinois.

Hands-on experiences like these generate excitement and motivate students to pursue STEM education and careers. “Participation in the TeraGrid conference has allowed me to develop a unique perspective on the applications of computer science and STEM so as to become a global citizen of the 21st century,” said Anthony Victor Clark of the Edmund Burke School in Washington, D.C., after his participation in the 2009 program.

The program also gives students the opportunity to share their research efforts and establish collaborations with leading-edge science and technology projects. Participants in the 2009 and 2010 programs cited their experience with TeraGrid and OSG as playing a role in helping them find a job in industry, administering high performance computing systems at their home institutions, and allowing them to expand their undergraduate and graduate research. “The conference really helps us get our foot in the door. It allowed me to meet people in my field,” said David Fiala, a Ph.D. student at North Carolina State University.

Students also compete in student poster and programming competitions at the TeraGrid conferences. Teams have 24 hours to solve a set of science- and computational science-oriented questions, tuning existing computing code, running jobs on TeraGrid resources, and comparing benchmarking results. “They were working on high-end supercomputers for the competition, and they all received educational allocations on TeraGrid after the conference so they can continue to learn about working with large systems and parallel processes,” McGinnis says.

Christal Yost, of Tennessee’s Pellissippi State Technical Community College, expresses the sentiments of many who have attended the TeraGrid Student Program. “I met a number of inspirational people within the HPC community and I felt welcome as a newcomer to this community. I learned a lot about where HPC has been, where HPC is going, and the current contributions of HPC. It was an invaluable experience.”

Relevant link: TeraGrid Student Program: https://www.teragrid.org/web/events/tg10/student
Pittsburgh Supercomputing Center: http://www.psc.edu/ Open Science Grid: http://www.opensciencegrid.org/