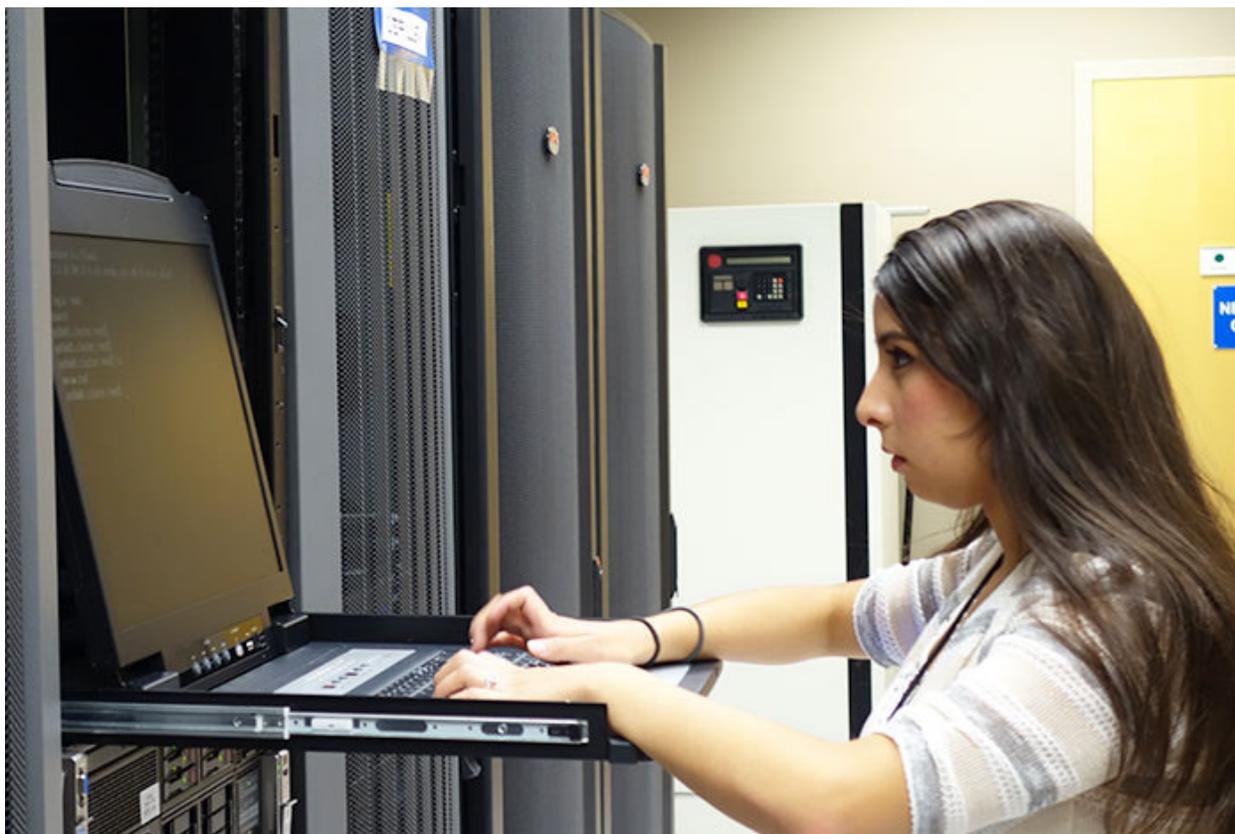

Students gain valuable supercomputing skills while getting paid

September 1, 2015



Over the past nine years Los Alamos National Laboratory's nine-week Computer System, Cluster and Networking Summer Institute has hosted 106 undergraduate students from 36 universities nationwide, including five New Mexico universities.

"Program graduates leave with a unique set of skills that are highly sought after at Los Alamos and in other high-performance computing settings," said Carolyn Connor, the institute's director and co-founder. "Approximately 50 percent of our summer participants have returned to the Laboratory for additional internships and post-bachelor's appointments. Of these, approximately 40 percent have been converted to permanent staff positions."

On the first day of this summer's institute, the selected 12 students participated in an initial orientation meeting and then were divided into teams of three. The students were

taken into a small computer server room and instructed to start assembling their own supercomputer clusters.

“I had never even seen a supercomputer before,” Destiny Velasquez, a University of New Mexico-Los Alamos student from the Española area, said. “But the first day turned out to be a great beginning to a great summer. The program emphasizes practical skills development, and it was a wonderful experience and a lot of fun.”

The server room was about the size of a small classroom, according to Velasquez, and very cold to protect the equipment.

“Each team was responsible for one computer cluster,” Velasquez explained. “We started to plug in cables, and next we labeled, grouped and tied all of the cables together to organize them.”

For the next two weeks, the teams continued to build their supercomputer clusters, including installing and running an operating system and software stack.

Hands-on problem-solving

Beginning with the third week, the individual teams switched to solving real-world challenges on their newly assembled and configured machines under the guidance of Laboratory technical mentors.

For example, Velasquez and her two team mates—David Huff from the New Mexico Institute of Mining and Technology (New Mexico Tech) and Darrin Schmitz from Dakota State University—successfully discovered an innovative way to divide two sets of data with the help of their cluster computer.

“We were able to overcome a long string of technical problems to divide the data,” Velasquez noted, “but our proposed solution is a work in progress and will need additional investigation to address potential security risks.”

The 2015 Computer System, Cluster and Networking Summer Institute neared its end as each team produced a poster describing their project and gave a presentation during Los Alamos’ annual Computing and Information Technology Student Mini-Showcase.

Destiny Velasquez feels that she learned a lot during the summer institute and that her participation will give her an important foundation for her remaining college classes.

“I initially was working toward an associate degree in information technology,” Vasquez explained, “but now I have my sights set on a bachelor’s and hopefully master’s in computer engineering.”

Velasquez likely will reach her goals since she already has shown plenty of determination and initiative. Two days out of high school she started training with an Albuquerque-based desktop computer service provider for Los Alamos National Laboratory and soon was their sole service technician for the entire Lab while also attending college.

Qualified third-year undergraduate college students in computer science, computer engineering or similar majors are invited to apply to the 2016 Computer System, Cluster and Networking Summer Institute between January 5 and February 13, 2016. For details, consult the Information Science and Technology Institute’s [How to Apply for Computer System, Cluster, and Networking Summer Institute](#) web page.

Community Connections features news and opportunities that grow out of the Laboratory's Good Neighbor Pledge: "To partner with our neighbors on strengthening math and science learning, diversifying the economy and expanding community giving in northern New Mexico."

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