

Early decision deadline: October 13, 2020
Regular decision: December 1, 2020

Eligibility

Undergraduate and graduate students as well as recent graduates in **all majors** who have computer science, computer engineering, information technology, or related experience are eligible. Interns must meet LANL student program requirements, and have an **intermediate understanding of the Linux operating system and command line**.

See our website for details!



The Programming and Runtime Environments Team with our one-million-core supercomputer, Trinity.

To apply, send in PDF format to e-mail address below:

1. current resume
2. unofficial transcript, including GPA
3. cover letter describing (a) your professional interests, experience, and goals; (b) why you are interested in the Supercomputer Institute; and (c) what you hope to contribute to our team environment



“[Instructor] was an outstanding instructor and I could not have expected anything better.” — prior intern

questions and application materials to:
super@lanl.gov

<http://www.lanl.gov/org/ddste/aldsc/hpc/recruiting>

While no clearance is required for this internship, interns have the potential to work toward a regular position in a LANL division that will require a Q Clearance. To obtain a Q Clearance, an individual must be at least 18 years of age; U.S. citizenship is required except in very limited circumstances and must meet eligibility requirements for access to classified matter. See DOE Order 472.2 for additional information. Applicants selected will be subject to a Federal background investigation.

2021 Los Alamos National Laboratory High Performance Computing Division Supercomputer Institute

Technical summer program offering hands-on experience building and operating state-of-the-art and next-generation compute clusters, high-speed networks, extreme-scale filesystems, containers, security, and more.



Instructor (left) and intern diagnosing compute node hardware.

“[Instructor was] super smart and extremely positive. He made me feel comfortable asking questions, and he was always trying to make sure that I was succeeding.”
— prior intern

“[T]he connections I made this summer will be beneficial moving forward, both career-wise and as lasting friendships once the internship is over.”

— prior intern



Interns cabling their mini-supercomputer.

“My expectations for this boot camp were blown away and I have already recommended this boot camp / internship to people who had never even considered LANL prior” — prior intern

Program overview

This program is an **intense, paid, 11-week, hands-on technical internship** for people interested in the growing field of high-performance computing.

During “boot camp”, small teams of interns build, configure, test, and operate an HPC compute cluster starting from scratch. This boot camp includes classroom instruction, hardware work in the machine room, sysadmin work in the office, and safety training. **Learn how to turn a heap of equipment, cables, and electricity into a working mini-supercomputer and demonstrate that it can run real HPC applications!**

Next, the project phase begins. Teams of interns work under the guidance of HPC Division staff mentors on applied research and development projects that address real challenges currently faced by the division. These projects regularly influence the division as well as the field of high-performance computing.

Collaborate with HPC Division staff and others around the Laboratory on real projects that make a real difference!

Finally, teams present their accomplishments as a poster and technical talk to Laboratory management, staff, and fellow interns in an end-of-summer celebration of intern work.



LANL scientists working in our CAVE advanced visualization facility.

Recent project titles

Troubleshooting and analyzing network booting challenges using a Raspberry Pi testbed

Evaluating container image distribution methods for HPC using Charliecloud

Injecting systemic faults to evaluate risks of a multi-cluster Slurm database

Performance studies of parallel erasure coding on clustered micro storage servers

An analysis of the effects of Spectre and Meltdown patches on the Lustre parallel filesystem

Utilizing the Elastic Stack for modular metric aggregation to enable user-accessible cluster monitoring



High Performance Computing Division staff working on a supercomputer called Luna.

Professional development

In addition to the technical portion of the program, interns also participate in fast-paced, focused professional development work, including:

- Intense mentoring
- Teamwork and professional collaboration
- Resume writing and evaluation
- Technical poster/presentation design and public speaking
- Technical seminars on current HPC topics. Past seminars include high-speed networking, Linux containers, parallel filesystems, facilities, and more.
- Science lectures given by staff from across the Laboratory, from how the Mars Rover works to machine learning/AI to black hole collisions.
- Opportunities to sign up for tours of our world-class facilities, including the magnet lab, particle accelerator, million-core supercomputer, and ultra-cold quantum computer.

Join the Institute and gain unique skills attractive to HPC centers and other world-class IT/computing facilities!