

Opportunity Title: Artificial Intelligence Summer Institute (AISI) - Summer 2020

Opportunity Reference Code: ORNL-HERE-AISI-Summer_2020



Organization Oak Ridge National Laboratory (ORNL)

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How to Apply Oak Ridge National Laboratory is suspending all new internship appointments, effective immediately, due to health and safety concerns over the COVID-19 outbreak. This includes the Lab's summer 2020 programs.

There is a small chance that the suspension of new internship appointments could be lifted if circumstances change, but for now this move will help minimize the risk to visiting students and to the Laboratory.

For the latest information and guidance, please visit these COVID-19 resources:

- Centers for Disease Control & Prevention: <https://www.cdc.gov/coronavirus/2019-nCoV/summary.html>
- State Department: <https://travel.state.gov/content/travel/en/traveladvisories/ea/novel-coronavirus-hubei-province--china.html>
- Department of Energy: <https://www.energy.gov/coronavirus-hub>

If you have any questions, please contact us at ORNLedu@ornl.gov.

Selections will be made on a rolling basis starting January 1, 2020 and continuing until filled. To be considered, applications must be fully submitted by January 31, 2020 and two recommendations must be received within the Zintellect system by February 8, 2020. Applicants will be notified when selections are completed. **For best chance of selection, please complete and submit your application as soon as possible.**

The application will require:

1. Profile information
2. Education information (i.e. dates of attendance/graduation, GPAs, majors, etc.)
3. Awards and honors
4. Internship and employment information
5. Information on goals, research interest areas, experience, and skills (particularly in artificial intelligence, machine learning, and data science)
6. Academic status and proof of continuing acceptance/enrollment
7. Unofficial or official transcript (most recent available) showing name, school name, current classes, cumulative GPA, received degrees (if applicable)
 - **Official transcript will be required if selected**
8. An updated resume/CV
9. Name and email for 2 professional or academic recommenders

Application Deadline 1/31/2020 3:00:00 PM Eastern Time Zone

Description The Artificial Intelligence Summer Institute (AISI) will collaborate with Oak Ridge National Laboratory (ORNL) scientists on solving problems of national and scientific interest, engage in educational and professional development opportunities, explore career opportunities at national laboratories, and interact with and present their research to ORNL's scientists.

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As part of the summer institute, students will be organized into teams with diverse educational backgrounds and develop their skills to help solve scientific challenges using artificial intelligence, machine learning, and data science. They will learn from ORNL mentors who have expertise in artificial intelligence and machine learning and/or domain sciences such as physics, materials, or biology. Students will participate in an educational and professional development seminar series. They will also learn and participate in scientific communication exercises to prepare them for a career in scientific research, including oral and poster presentations and technical reports.

Students will participate in projects in one or more of the following research areas:

- **Fundamental AI/ML:** The team for fundamental AI/ML research focuses on developing novel AI/ML methodologies in order to address grand mathematical challenges, e.g., high dimensionality, lack of robustness, uncertainty quantification, etc., arising from scientific applications at DOE experimental and high-performance computing facilities.
- **Scientific Imagery/Image Analytics:** At ORNL we are tackling scientific deep learning applications in medical imaging, manufacturing, and geospatial AI. Our projects are pushing the state of the art in 2D and 3D image segmentation, classification, registration, and tomographic reconstruction leveraging ORNL's unique capabilities in high performance computing and AI.
- **Reinforcement Learning:** The reinforcement learning team focuses on model-based reinforcement learning with Bayesian methodologies, which are particularly apt for scientific settings, which demand utmost data efficiency, as experiments are necessarily expensive. Reinforcement learning methods are used in many scientific applications, such as in materials synthesis to provide automated guidance of synthesis trajectories towards desired material properties.
- **Scalability:** The scalability efforts focus on developing novel scalable machine learning algorithms on leadership-class computing resources such as the world's fastest supercomputer, Summit. A team of domain-specialists and computer scientists leverages the vast troves of data generated within the DOE complex and work together closely to push the performance boundaries of these high-performance machine learning methods by improving the training speed and inference quality in a variety of large-scale science and technology applications.

PROGRAM DETAILS:

- Full-time appointment
- Start date of June 1, 2020 and ending date of August 7, 2020

Stipend Rates: Stipends are based on academic level as shown below and paid on a biweekly schedule. **You should be prepared to cover all expenses for the first 30 days of your appointment.**

Class Status*

- **Recent Bachelor's Graduate** - \$750 per week (*proof of degree required*)
 - *Will include those applying as seniors and graduating by June 1, 2020 as long as official proof of graduation is provided prior to starting appointment*
- **Current Master's Student** - \$850 per week (*must have started graduate program at time of application*)
- **Recent Master's Graduate (*proof of degree required*)** - \$900 per week
- **First or Second Year Current Ph.D. Student** - \$900 per week
- **Third Year or Higher Current Ph.D. Student or Ph.D. Candidate** - \$1,175 per week

*Denotes class status completed **at the time of application and prior to ORNL report date** and as defined by college/university on official or unofficial transcript or academic record requirement in application.

Housing Allowance and Reimbursement for Site Travel:

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- \$175/week housing allowance (paid with biweekly stipend) and limited travel reimbursement of up to \$500 total based on federal and program guidelines for full-time participants if permanent address is at least 50 miles from Oak Ridge
- Learn more about [Housing for ORNL Research Participants](#)






For more information, visit [Science Education Programs at ORNL](#) or contact HERE@ornl.gov.

Qualifications

Eligibility requirements:

- Be currently enrolled as a senior undergraduate (must be graduating prior to start date and provide proof of degree) at time of application in a degree-seeking program at a regionally accredited U.S. college or university at time of application
 - Must provide proof of acceptance/enrollment for fall 2020 in a degree-seeking graduate program at a regionally accredited U.S. college or university (provide with application if available or by May 1, 2020 if selected)
- Or have graduated with a bachelor's degree in the last six (6) months (at the time of application) from a regionally accredited U.S. college or university
 - Must provide proof of acceptance/enrollment for fall 2020 in a graduate degree program at a regionally accredited U.S. college or university (provide with application if available or by May 1, 2020 if selected)
- Or be currently enrolled in a master's degree-seeking program at a regionally accredited U.S. college or university at time of application
- Or have graduated with a master's degree in the last six (6) months (at the time of application) from a regionally accredited U.S. college or university
- Or be a current Ph.D. student or Ph.D. candidate at time of application
- Have a cumulative minimum GPA of 3.0 on a 4.0 scale
- Be 18 years of age
- Be a U.S. Citizen or Lawful Permanent Resident (LPR) at the time of application - LPRs are subject to DOE clearance approval for laboratory entry
- Have medical insurance effective for entire term of appointment - information on effective dates during appointment period will be required at time of appointment acceptance
- Have two academic or professional recommenders
- Have ORCID identifier number at time of acceptance

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 6 months or currently pursuing.
- **Overall GPA:** 3.00
- **Discipline(s):**
 - **Computer, Information, and Data Sciences** (16 )
 - **Engineering** (3 )
 - **Life Health and Medical Sciences** (1 )
 - **Mathematics and Statistics** (10 )
 - **Other Physical Sciences** (1 )
- **Age:** Must be 18 years of age

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Affirmation I certify that:

- To the best of my knowledge all information contained in this application is accurate
- I understand that any falsification will render me ineligible for participation and, if found after participation has begun, may require me to reimburse any funds received
- I have reviewed the academic statuses for eligibility and meet the stated requirements.
- I understand that proof of my degree and/or an updated transcript plus proof of enrollment in continuing graduate education (if graduating or graduated with bachelor's degree) will be required by indicated date.