

Opportunity Title: 2024 High Performance Computing Modernization Program (HPCMP) Summer Program: Neural Network Pipeline Design and Implementation
Opportunity Reference Code: HPCMP-HIP-2024-038

Organization U.S. Department of Defense (DOD)

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How to Apply Click on *Apply* at the bottom of the opportunity to start your application.

Description **About High Performance Computing Modernization Program (HPCMP)**

The Department of Defense's (DoD) High Performance Computing Modernization Program (HPCMP) sponsors two summer research opportunities: the High-Performance Computing Internship Program (HIP) and the Faculty Immersion Experience (FIX). These 10-week experiences are offered in collaboration with more than a dozen DoD hosting organizations nationwide. Both programs seek to strengthen DoD and academic collaboration, enhance research capabilities, and encourage broader university-level participation in high-end computing.

The Department of Defense (DoD) established the [High Performance Computing Modernization Program \[hpc.mil\]](#) (HPCMP) as a department-wide program to provide DoD scientists, engineers, and acquisition engineering professionals with the computational resources needed to develop robust solutions to complete technical challenges.

About ERDC-ITL

At the US Army Engineer Research & Development Center's Information Technology Laboratory, we lead research and development in informatics, computational science, and computational engineering with an emphasis on high-performance computing, computer-aided and interdisciplinary engineering, computer science, systems engineering, and instrumentation systems.

What will I be doing?

The area of neural network (NN) design is of high interest for decision support. The intent of this project is to learn the basics of NN design and to design and implement a NN. You will learn about hyperparameter optimization and about tools for assisting with hyperparameter optimization. The effort will focus on ML models applied to real world problems using both local and HPC resources. Under the guidance of a mentor, you will gain basic knowledge needed to handle and work with regression-based data for neural network design. This basic knowledge would include steps to take upon receiving a dataset, how to design basic networks, how to perform hyperparameter optimization, and how to search for methods to further refine a neural network.

Why should I apply?

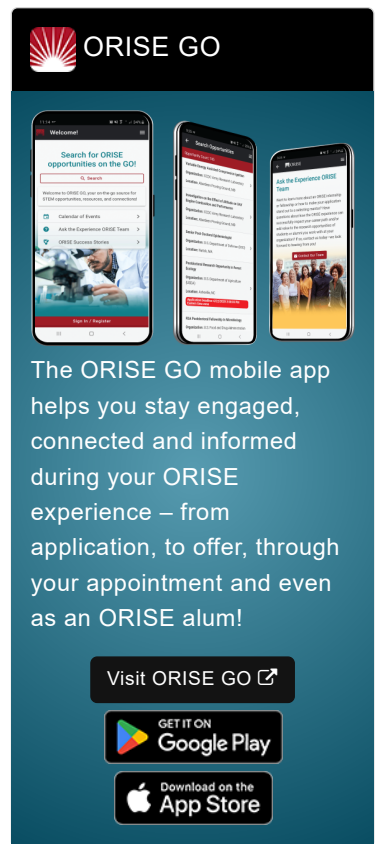
This internship will give you an opportunity to:

- Learn from and collaborate with scientists and engineers at DoD facilities across the nation.
- Contribute to significant Research, Development, Test, Evaluation & Acquisitions Engineering activities.
- Develop critical skills and establish long-term connections.
- Receive financial support including a stipend and travel allowances.
- Gain a competitive advantage and improve long-term career opportunities.

Where will I be located? Vicksburg, MS

What is the anticipated start date? May 2024

What is the appointment length? This appointment is a 10-week summer research appointment.



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Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

What are the benefits?

- **Stipend:** Participants receive a monthly stipend to help defray living expenses during the appointment. Stipend rates are determined by HPCMP based on the participant's education level.
- **Dislocation Allowance:** A dislocation allowance may be provided for participants who relocate more than fifty miles, one-way, to the designated host site. This includes roundtrip domestic travel to/from the host location. Participant is responsible for and local transportation prior to arriving at the designated host site.
- **Professional Travel:** Participants may be eligible for reimbursement of pre-approved professional travel expenses related to the educational goals of the designated opportunity.
- **Health Insurance:** Participants may be eligible to enroll in ORISE health insurance to cover medical, dental and vision insurance.

ABOUT ORISE

This program, administered by Oak Ridge Associated Universities (ORAU) through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and DoD. Participants do not enter into an employee/employer relationship with ORISE, ORAU, DoD or any other office or agency. Instead, you will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE. For more information, visit the ORISE Research Participation Program at the U.S. Department of Defense.

Qualifications The ideal candidate must be highly motivated and willing to apply themselves to difficult problems.

Applicants need to meet the following eligibility criteria at the time of application:

- Be a U.S. citizen.
- Be at least 18 years of age.
- Pursuing an associate, bachelor's, or master's degree or received within the last five years in a science, technology, engineering or mathematics (STEM) discipline.
- Have a cumulative GPA of 3.0 or higher on a 4.00 scale.

Applicants should be able to pass a National Agency Check and Inquiries (NACI) security investigation should they be selected and accept the internship offer.

A complete application consists of:

- Zintellect Profile
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records - For this opportunity, an official transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. [Click here](#) for detailed information about acceptable transcripts.
- One recommendation - We encourage you to contact your recommender(s) as soon as you






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start your application to ensure they are able to complete the recommendation form and to let them know to expect a message from Zintellect. Recommenders will be asked to rate your scientific capabilities, personal characteristics, and describe how they know you. You can always log back in to your Zintellect account and check the status of your application.

Submitted documents must have all social security numbers, student identification numbers, and/or dates of birth removed (blanked out, blackened out, made illegible, etc.) prior to uploading into the application system. All documents must be in English or include an official English translation. If you have questions, send an email to HPCMP@orise.orau.gov. Please list the reference code of this opportunity in the subject line of the email. Please understand that ORISE does not review applications or select applicants; selections are made by the sponsoring agency identified on this opportunity. All application materials should be submitted via the "Apply" button at the bottom of this opportunity listing. Please do not send application materials to the email address above.

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**Eligibility
Requirements**

- **Citizenship:** U.S. Citizen Only
- **Degree:** Associate's Degree, Bachelor's Degree, or Master's Degree received within the last 60 months or currently pursuing.
- **Overall GPA:** 3.00
- **Discipline(s):**
 - **Computer, Information, and Data Sciences** ([17](#) )
 - **Engineering** ([27](#) )
 - **Mathematics and Statistics** ([11](#) )
 - **Physics** ([16](#) )
 - **Science & Engineering-related** ([2](#) )
- **Age:** Must be 18 years of age
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).