Opportunity Title: High Performance Data Analytics: Information Technology Laboratory Summer Internship
Opportunity Reference Code: ERDC-ITL-2023-0037

Organization U.S. Department of Defense (DOD)

Reference Code ERDC-ITL-2023-0037

How to Apply Click on *Apply* now to start your application.

Description The Computational Science and Engineering Division (CSED) of ERDC ITL specializes in analytical, computational, and machine learning modeling of systems and processes on high performance computers. The CSED has over 120 researchers from multiple disciplines (including Computer Science, Civil Engineering, Mechanical Engineering, and Mathematics) and is engaged in challenging, high-impact research for some of the Nation's toughest problems.

Projects: Current research in High Performance Data Analytics led by CSED is making a difference. Machine learning models built using HPC resources are being used by the Army to greatly improved maintenance on aviation fleets (saving time, decreasing cost, and improving availability of assets. Another project is developing Digital Twins of two dams as a prototype effort to deliver capabilities to monitor dam and levee structures, incorporating machine learning models into the software system to better inform decision makers. Other projects are aimed at building digital models of U.S. Army installations and provide local managers a holistic view of the status of key elements of the site.

Program Plan: This program will use interns to participate in one or more of the teams that are engaged in Data Analytics and Computational Modeling. Interns will be provided with the necessary computational resources and guidance on project work to participate in. The tasks of each intern will be tailored according to the needs of the project and the skills/experience of the student.

Intern Activities: These research efforts are available to students with an interest in computer science, engineering, and mathematics. The project will expand the student's experience in data analytics, data processing, and digital twinning. Large, complicated datasets will be involved. Intern activities will include things like the following: (1) building a database and/or adding data to a database using scripting tools or a language like Python; (2) analyzing data with existing tools; (3) assisting in building/modifying Machine Learning models; (4) executing simulations on HPC systems; (5) analyzing the results; (6) modifying models, tools, and settings to improve performance.

What will I be doing?

Under the guidance of a mentor, you will gain knowledge and experience in data analytics, data processing, and digital twinning. Large, complicated datasets will be involved. You will participate in one or more of the teams that are engaged in Data Analytics and Computational Modeling. You will be provided with the necessary computational resources and guidance on the following activities:

- Building a database and/or adding data to a database using scripting tools or a language like Python
- Analyzing data with existing tools
- Building/modifying Machine Learning models
- Executing simulations on HPC systems
- Analyzing the results

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- Modifying models, tools, and settings to improve performance

Why should I apply?

This fellowship provides the opportunity to independently utilize your skills and engage with experts in innovative ideas to move the proposed research forward.

Where will I be located? Vicksburg, Mississippi

What is the anticipated start date? May/June 2023

Exact start dates will be determined at the time of selection and in coordination with the selected candidate.

What is the appointment length?

This appointment is a summer research appointment. Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

What are the benefits?

You will receive a stipend to be determined by the sponsor. Stipends are typically based on a participant's academic standing, discipline, experience, and research facility location. Other benefits may include the following:

- Health Insurance Supplement (*Participants are eligible to purchase health insurance through ORISE)*
- Relocation Allowance
- Training and Travel Allowance

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

Students with interest in computer science, data science, and related fields. The following skills are valuable for this research or can be learned on site if not familiar.

- Data Analytics and Machine learning
- Python, C, C++, R programming
- Data base management

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

Application Requirements

A complete application consists of:

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- 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. Your application will be considered incomplete and will not be reviewed until one recommendation is submitted. We encourage you to contact your recommender(s) as soon as you 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 USACE@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.

Connect with ORISE...on the GO! Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral 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 👁)
- **Age:** Must be 18 years of age
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).