Opportunity Title: Computer Sciences: Environmental Phenomenology Digitization for Object Detection
Opportunity Reference Code: ERDC-CRREL-2023-0001

Organization	U.S. Department of Defense (DOD)
Reference Code	ERDC-CRREL-2023-0001
How to Apply	Click on *Apply* now to start your application.
Application Deadline	2/28/2023 3:00:00 PM Eastern Time Zone
Description	U.S. Army Corps of Engineers (USACE), Engineer Research and Development Center (ERDC), Cold Regions Research and Engineering Laboratory (CRREL), located in Hanover, New Hampshire, builds innovative products that support the warfighter, water resources, environment, infrastructure and homeland security. CRREL uses a multi-disciplinary research approach that solves the most difficult environmental physics and cold region engineering problems. With recognized international expertise, CRREL fosters partnerships across government agencies, academia and industry to solve complex problems.

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What will I be doing?

Environmental phenomenology plays a fundamental role in the capabilities of our sensors to detect obscure objects. Lack of diurnal stimulant or an abundance of soil volumetric water content hinders an automatic target recognition (ATR) algorithm's performance. Mining this environmental dataset and constructing correlations with object visibility offers greater insight into this degradation. Ultimately, highly resolved and robust environmental data is a necessity for training. Thus, ERDC-CRREL is interested in translating their findings towards development of a central library.

The library structure is desired to take the form of a distributed execution framework, or DEF. It will be mutable and modular to enable continuing optimization for both adaptability and consistency. This library will be designed to link to any external programs in a way to enable parallel execution from any platform.

Under the guidance of a mentor, you will participate in the construction of a rudimentary library base on the environmental datasets collected in Hanover, NH. ERDC-CRREL's in-house ATR algorithms will incorporate the library's routines to test feasibility, and if successful, expand and incorporate other environmental and meteorological data collected at other locales. Ultimately, the architecture of this refined library will be transformed into a graphical user interface (GUI) for portable and real-time field operation. You will gain knowledge by being a part of a multidisciplinary team and applying your classroom training towards real-world problems.

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.
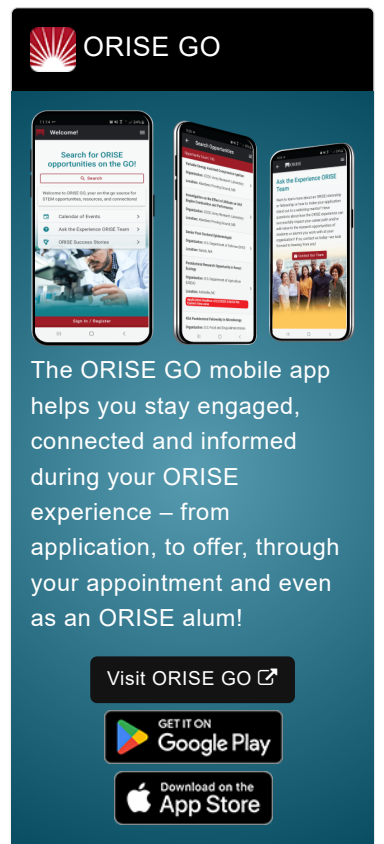
Where will I be located? Hanover, New Hampshire

What is the anticipated start date? February 1, 2023

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

What is the appointment length?

This appointment is a full-time sixth-month research appointment. Appointment may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

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What are the benefits?

You will receive a stipend to be determined by ERDC-CRREL. 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 Bachelor's, Master's, or Doctoral degree or currently pursuing in Computer, Information, and Data Sciences with knowledge of Java, Cpython, Python, and ROOT. The preferred candidate should have experience with Java and GUI development, and have an interest in big data processing, storage, and visualization.

Application Requirements

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. 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.

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.

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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.
	• **Discipline(s):**
	○ **Computer, Information, and Data Sciences** ([17 👁](#))