Opportunity Title: Computer Science / Machine Learning: Information Technology
Laboratory Summer Internship
Opportunity Reference Code: ERDC-ITL-2023-0025

Organization	U.S. Department of Defense (DOD)
Reference Code	ERDC-ITL-2023-0025
How to Apply	Click on *Apply* now to start your application.

Description

The ERDC Information Technology Laboratory (ITL), located in Vicksburg, MS is a premier Department of Defense laboratory engaged in the creation and application of advanced information technology in support of the Warfighter and the Nation. ITL conducts research and development in informatics and computational science and engineering with particular emphasis on high-performance computing, computer-aided and interdisciplinary engineering, computer science and instrumentation systems. The laboratory provides unmatched expertise in areas of data science, high-performance data analytics, software engineering, augmented and virtual reality, artificial intelligence and machine learning, cyber security, and edge HPC.

What will I be doing?

Under the guidance of a mentor, you will integrate computer vision deep learning models into Nvidia DeepStream, a framework for multi-platform high performance inferencing, which will then be deployed and tested on edge computing devices and HPC systems. You will port the existing super resolution and material segmentation models into Nvidia DeepStream plugins, which will then be combined with a GStreamer pipeline for data input and performance measurement. These pipelines will then be deployed to available computing systems for benchmark data collection. The final deliverables of the project will be the pair of DeepStream plugins, one for each model, as well as benchmark data, and the final report describing the process of porting the models and deploying the benchmark pipelines. The expected timeline is to have onboarding and initial familiarity with the models done in the first two weeks, perform the porting to DeepStream in the next four to five weeks, and the remaining time spent collecting data and completing the final report.

Through this project, you will gain experience with current machine learning frameworks, as well as GStreamer and DeepStream which are common platforms for deploying models in production environments. Additionally, you will have the opportunity to research with a variety of computing systems, from the small Jetson edge device to HPCMP systems, which will reinforce the need for portability in software solutions.

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?

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 10-week 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   The candidate should have a background in Computer Science related skills, with basic programming and Linux environment experience. Some experience with Python, and machine learning frameworks such as TensorFlow or PyTorch would be valuable, as well as familiarity with SSH and command line interfaces.

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:

- 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

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Eligibility Requirements	**Citizenship:** U.S. Citizen Only **Degree:** Associate's Degree or Bachelor'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** (1 👁) **Age:** Must be 18 years of age **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).