

Opportunity Title: Aerospace Engineering Summer Internship

Opportunity Reference Code: ERDC-ITL-2023-0019

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 DEVCOM ARL, as an integral part of the Army Futures Command, is the Army's foundational research laboratory focused on operationalizing science to ensure overmatch in any future conflict. DEVCOM ARL shapes future concepts with scientific research and knowledge and delivers technology for modernization solutions to win in the future operating environment. (<https://www.arl.army.mil>)

What will I be doing?

As an ORISE participant, you will join a community of scientists and researchers in an effort to develop a machine learning model to predict the 3D aerodynamics effects for rotorcraft applications using HPCMP CREATE-AV (Helios) to produce training data at various thrust loading levels and forward speeds. The resulting model can be used to enhance the accuracy of Helios Reduced Order Aerodynamics Model (ROAM). The research will seek to obtain an in-depth understanding of the rotorcraft 3D effects and apply that to improve the ROAM model in Helios by adding a data-driven 3D effects model. CFD results will be used as training data to develop a machine learning model to predict the 3D effects on blade loading for various loading and flight speeds. The CFD training data will be generated using HPCMP CREATE-AV Helios software. The resulting 3D effect model for rotorcraft may be used to enhance CREATE-AV Helios Reduced Order Aerodynamic Model and Army's Rotorcraft Comprehensive Analysis Systems (RCAS, developed by DEVCOM AvMC) to provide more realistic loading predictions for future Army rotorcraft programs.

Why should I apply?

Under the guidance of a mentor, you will engage in various research activities, including:

- Learn how to perform Helios/RCAS simulations using variety of HPC tools including Helios (CREATE-AV) and Capstone (CREATE-Genesis)
- Perform Helios and RCAS simulations on the HPC systems, and basic machine learning tasks
- Present the research findings to researchers in the mentor organization
- Employ software, methods, concepts related to the tasks (Helios, capstone, RCAS, machine learning overview)

Where will I be located? Aberdeen, Maryland

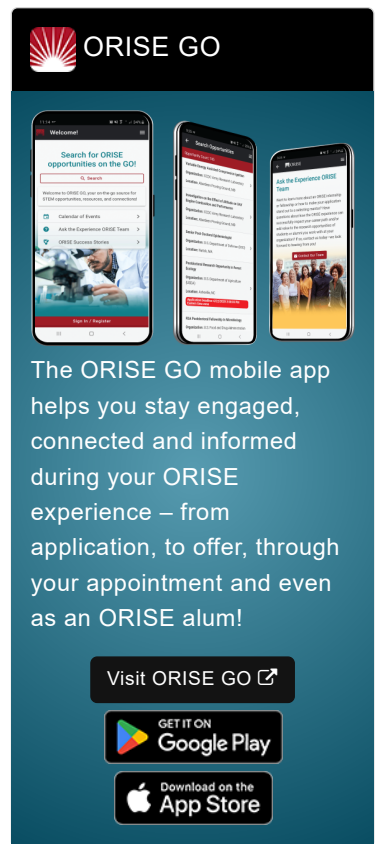
Exact start dates will be determined at the time of selection and in coordination with the selected candidate. Applications are reviewed on an ongoing basis and internships will be filled as qualified candidates are identified.

What is the appointment length?

This appointment is a summer research appointment, with the possibility to be renewed for additional research periods. 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



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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 qualified candidate should have an academic background in Aerospace Engineering.

Highly competitive applicants will have education and/or experience in one or more of the following:

- CFD experience
- Machine learning experience
- Python
- TensorFlow

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 - Please upload a copy of an official transcript for your current or most recent degree program that meets the disciplinary qualifications of the opportunity. [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

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this opportunity ERDC-ITL-2023-0019 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.
 - **Overall GPA:** 3.00
 - **Academic Level(s):** Graduate Students, Postdoctoral, or Post-Master's.
 - **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).