Opportunity Title: AFIT: NEAT Machine Learning and Imaging Research Internship
Opportunity Reference Code: AFIT-2022-0017

Organization U.S. Department of Defense (DOD)

Reference Code AFIT-2022-0017

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

Description The Air Force Institute of Technology (AFIT) located at the Wright-Patterson Air Force Base in Ohio is offering Bachelor's and Master's level internships at the Nuclear Expertise for Advancing Technologies (NEAT) Center.The Nuclear Expertise for Advancing Technologies (NEAT) Center was established in May 2019 within the AFIT graduate school. NEAT's mission is to provide the nation with relevant expertise to address emergent and future nuclear warfighting capabilities across all domains.

What will I be doing?

As an ORISE participant, you will join a community of scientists and researchers in an effort to develop radiation imaging algorithms for low information systems. This imaging is accomplished for localized sources by applying various analysis techniques including the locally competitive algorithm and machine learning (neural networks).

Additional research opportunities available through the NEAT Center involve the application of machine learning tools to electromagnetic signals emitted from routine industrial activities to provide indication of nuclear fuel cycle operations and support nuclear nonproliferation efforts.

Why should I apply?

Under the guidance of a mentor, you will gain broad experience in relevant nuclear technologies and engineering at the graduate level as it applies to the US Air Forces and Department of Defense and will benefit from the opportunities to conduct research with AFIT's experienced, professional faculty. You may also be involved in sponsored research through hands-on experiments, the application of computational analysis techniques, and interaction with government (Military and National Laboratory) and civilian university collaborators. Areas of research are broad and may include the fields of proliferation of nuclear weapons, nuclear detection, nuclear weapon effects, the nuclear fuel cycle, and/or nuclear power.

In addition, you will engage in activities and research in several areas including the following:

- Inverse problems
- Identification of radiation features and location
- Advanced machine learning concepts and analysis, such as minimally supervised learning

What is the anticipated start date?

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 or fellowships will be filled as qualified candidates are identified.

What is the appointment length?

This is a 14-week 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?

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You will receive a stipend to be determined by AFIT. 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 AFIT

AFIT is the Air Force's graduate school of engineering and management as well as its institution for technical professional continuing education. A component of Air University and Air Education and Training Command, AFIT is committed to providing defense-focused graduate and professional continuing education and research to sustain the technological supremacy of America's air, space and cyber forces. More information about AFIT can be found at: Welcome to the Air Force Institute of Technology / Celebrating 100 Year of Inspiration to Innovation / 1919 - 2019 (afit.edu)

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 is currently pursuing a Bachelor's or Master's degree, or have an earned degree within the last two years in eir degree in a science, engineering, mathematics, or other highly quantitative field.

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

- Exceptional academic performance
- Strong analytical and communication (oral and written) skills
- Ability to think creatively and perform research at the graduate level
- Interest in being part of a fast-paced environment focused on nuclear engineering research, mentoring, and student development

Application Requirements

A complete application consists of:

- Zintellect Profile
- Educational and Employment History

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- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records - For this opportunity, an unofficial 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.
- 1 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 AIRFORCE@orise.orau.gov. Please list the reference code of this opportunity AFIT-2022-0017 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 or Master's Degree received within the last 24 months or currently pursuing.
- **Overall GPA:** 2.75
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Computer, Information, and Data Sciences** (6 👁)
  - **Engineering** (14 👁)
  - **Mathematics and Statistics** (11 👁)
  - **Physics** (16 👁)
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).