

**Opportunity Title:** Cognitive Neuroscience Research Fellowship at the Air Force Research Laboratory (AFRL)

**Opportunity Reference Code:** AFRL-711HPW-2022-0017

**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** The Air Force Research Laboratory's (AFRL) Cognitive Neuroscience section is offering a graduate-level fellowship for a researcher to participate in the preparation and completion of human subject research efforts, which includes the opportunity to gain experience in report writing.

#### What will I be doing?

As an ORISE participant, you will join a community of scientists and researchers investigating the application of novel cutting-edge neuromodulation technology and its impact on performance in healthy research volunteers.

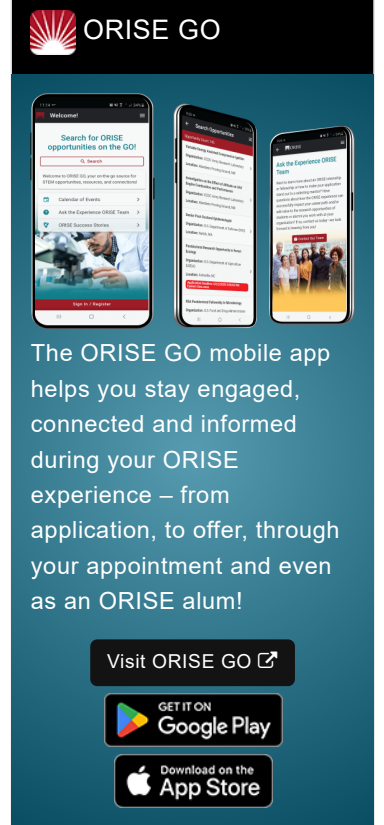
Scientists and engineers have devoted significant efforts towards developing brain-machine interfaces (BMIs), which convert brain neural signals into commands that drive desired outcomes and/or software and hardware control inputs. While advancements have led to reasonable applications in clinical populations, the resolution of information extracted noninvasively from the brain has limited its practical use within non-clinical populations. Further, BMIs that send information into the brain (i.e. "write") at high resolution in addition to extracting information from the brain (i.e. "read") require further development. To address these challenges, the [Defense Advanced Research Projects Agency's Next-Generation Nonsurgical Neurotechnology program \(N3\)](#) has been developing "high-performance, bi-directional brain-machine interfaces for able-bodied service members". It's projected that outputs from this program will change how humans interact with technology by enabling the future of enhanced human-machine symbiosis.

#### Why should I apply?

As a fellow in this research experience, you will help the AFRL's Cognitive Neuroscience section demonstrate the effectiveness of (N3) technology in human volunteers at Wright Patterson Air Force Base (WPAFB) in Dayton, Ohio. Under the guidance of a mentor, you will take part in the design, software and/or hardware development, subject recruitment, data collection, analysis and presentation of efforts. This effort is anticipated to emphasize the "write" portion of the N3 program, which will use cutting-edge neuromodulation techniques—though "read" elements may be incorporated in the future. You will collaborate with a team of engineers and scientists leading data collection efforts at WPAFB and help develop and implement the software, experimental tasks, software/hardware integration, testing protocols, and data analysis associated with this investigation. Therefore, you may expect to expand your knowledge and obtain skills involving human subject data collection, particularly with military-relevant populations, during this fellowship. Additionally, you will learn how to administer and instrument novel non-invasive "write" technologies as well as gain hands-on experience developing training paradigms necessary to teach individuals the meaning of messages sent to the brain. This will also be an opportunity to apply software and software/hardware integration skills to a novel real-time application within a virtual task environment. You may also gain experience linking the application of "write" technologies to cognitive performance outcomes in addition to report writing and presentation experience.

#### Where will I be located?

Dayton, Ohio



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**What is the anticipated start date?**

AFRL is ready to make appointments immediately. 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 fellowships will be filled as qualified candidates are identified.

**What are the benefits?**

You will receive a stipend to be determined by AFRL. 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 AFRL 711 HPW**

The 711th Human Performance Wing (711 HPW), headquartered at Wright-Patterson Air Force Base in Ohio, is the first human-centric warfare wing to consolidate human performance research, education, and consultation under a single organization. Established under the Air Force Research Laboratory (AFRL), the 711 HPW is comprised of the Airman Systems Directorate (RH) and the United States Air Force School of Aerospace Medicine (USAFSAM). For more information about the Air Force Research Laboratory, 711 Human Performance Wing, Airman Systems Directorate, Airman Biosciences Division, please visit <https://afresearchlab.com/>.

**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 recently have received, or currently be pursuing and expect to receive by 6/30/2023, a Master's degree or Ph.D. with a major in engineering, computer science, mathematics, psychology, or a related discipline. Degree must have been received within two years of the appointment start date.

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

- Developing tasks and analyzing data using MATLAB/Python/other appropriate software
- Collecting data from human subjects
- Leading or managing research projects
- Designing experiments
- Integrating hardware/software
- Neuromodulation and/or electromyography (not required)

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The eligible candidate must meet the requirement to gain access to Wright-Patterson Air Force Base, Ohio. A security clearance is NOT required.

**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 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.](#)
- 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 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](mailto:AIRFORCE@orise.orau.gov). Please list the reference code of this opportunity [AFRL-711HPW-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:** Master's Degree or Doctoral Degree received within the last 24 months or anticipated to be received by 6/30/2023 12:00:00 AM.
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** ([17](#) 👁)
  - **Engineering** ([27](#) 👁)
  - **Life Health and Medical Sciences** ([5](#) 👁)
  - **Mathematics and Statistics** ([11](#) 👁)
  - **Physics** ([2](#) 👁)
  - **Social and Behavioral Sciences** ([4](#) 👁)