Opportunity Title: Real-World Neuroimaging Technologies II
Opportunity Reference Code: ARL-R-HRED-300012a

Organization	DEVCOM Army Research Laboratory
Reference Code	ARL-R-HRED-300012a
Description	**About the Research**

Basic science research is needed to address critical knowledge gaps underlying efforts to seamlessly integrate humans and advanced technology for future military and civilian applications. Broad needs defined within this problem space demand high-quality, complex experimentation combined with advanced quantitative analysis and modeling of human brain-body states and their dynamics in simulated and actual (real-world) operational contexts. More specifically, the Real-World Neuroimaging program at the U.S. Army Research Laboratory (ARL) has the goal of furthering our understanding of how laboratory-based research findings in human performance translate to real-world situations.

Real-world neuroimaging technologies at ARL represents developing and executing experimental research which furthers our ability to assess brain activity as it occurs within real-world settings, where neuroimaging conditions are less than ideal and often target cognitive states which are elusive in traditional laboratory scenarios. Example topic areas include: 1) development and testing of novel neuroimaging hardware, such as dry, non-metallic, highly flexible sensors for EEG, ultra-low-power system design, and custom-adaptive cap design; 2) Development and use of novel methods and tools for assessing data quality, such as EEG "phantoms" and new analytical comparison techniques; 3) Novel software algorithms for dealing with motion artifacts, improving data SNR, and improving interpretation of noisy data; and 4) methods for displaying and interpreting EEG data in real-time.
Primary location is at ARL at Aberdeen Proving Ground, MD, but could involve travel to partner universities.

We seek a Research Associate to assist with all aspects of the process from designing and executing experiments to publishing and presenting findings.

Applicants must have earned a doctoral degree (Ph.D.) in Cognitive Science, Psychology, Neuroscience, Biomedical Engineering, Human Factors, Bioinformatics, or a closely related discipline. A strong preference is afforded to candidates capable of independent, end-to-end data analysis including acquisition, signal conditioning and data reduction, visualization, and statistical analysis and/or quantitative modeling. Substantial high-level programming experience (i.e. MATLAB, Python, C/C++, R), is heavily preferred. Candidates should demonstrate a strong scientific background with examples of recent high-quality first-author presentations and writing. Strong candidates will have already successfully published (or had work accepted for publication) in one or more peer-reviewed journals.

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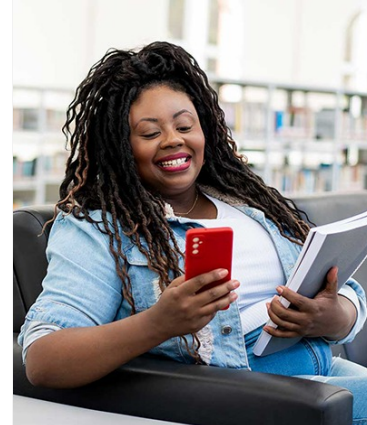
About HRED

The Human Research and Engineering Directorate (HRED) is ARL's principal center for research and development directed toward optimizing Soldier performance and human-autonomy teaming. Research within HRED focuses on how to improve Soldier performance in a dynamic and changing battlefield. As technology and autonomous systems become an increasingly integral part of Soldier teams, it is critical to determine how these systems can work with and be adapted to the Soldier and their capabilities. Autonomous systems must be able to be integrated into Soldier teams and move from tools to teammates. Critical to this is an understanding of how humans and human teams perform and change in dynamic environments and situations. HRED leverages human-robot interaction, human-informed machine learning, human cognition and adaptive teaming to improve human-autonomy teaming for future Army teams.

About ARL-RAP

The [Army Research Laboratory Research Associateship Program](#) (ARL-RAP) is designed to significantly increase the involvement of creative and highly trained scientists and engineers from academia and industry in scientific and technical areas of interest and relevance to the Army. Scientists and Engineers at the CCDCArmy Research Laboratory (ARL) help shape and execute the Army's program for meeting the challenge of developing technologies that will support Army forces in meeting future operational needs by pursuing scientific research and technological developments in diverse fields such as: applied mathematics, atmospheric characterization, simulation and human modeling, digital/optical signal processing, nanotechnology, material science and technology, multifunctional technology, combustion processes, propulsion and flight physics, communication and networking, and computational and information sciences.

A complete application includes:

- **Curriculum Vitae or Resume**
- **Three References Forms**
  - An email with a link to the reference form will be available in Zintellect to the applicant upon completion of the on-line application. Please send this email to persons you have selected to complete a reference.
  - References should be from persons familiar with your educational and professional qualifications (include your thesis or dissertation advisor, if applicable)
- **Transcripts**
  - Transcript verifying receipt of degree must be submitted with the application. Student/unofficial copy is acceptable

If selected by an advisor the participant will also be required to write a **research proposal** to submit to the ARL-RAP review panel for :

- Research topic should relate to a specific opportunity at ARL

(see [Research Areas](#))

- The objective of the research topic should be clear and have a defined outcome
- Explain the direction you plan to pursue
- Include expected period for completing the study
- Include a brief background such as preparation and motivation for the research
- References of published efforts may be used to improve the proposal

A link to upload the proposal will be provided to the applicant once the advisor has made their selection.

Questions about this opportunity? Please email ARLFellowship@orau.or

Eligibility Requirements	- **Degree:** Doctoral Degree.
	- **Academic Level(s):** Any academic level.
	- **Discipline(s):**
	  - **Chemistry and Materials Sciences** (12 👁)
	  - **Communications and Graphics Design** (1 👁)
	  - **Computer, Information, and Data Sciences** (16 👁)
	  - **Engineering** (27 👁)
	  - **Environmental and Marine Sciences** (1 👁)
	  - **Life Health and Medical Sciences** (45 👁)
	  - **Mathematics and Statistics** (10 👁)
	  - **Other Non-Science & Engineering** (5 👁)
	  - **Physics** (16 👁)
	  - **Science & Engineering-related** (1 👁)
	  - **Social and Behavioral Sciences** (28 👁)
	- **Age:** Must be 18 years of age