Opportunity Title: Enhancing Performance of Human-Robot Interactions
Opportunity Reference Code: ARL-R-HRED-300076

Organization DEVCOM Army Research Laboratory

Reference Code ARL-R-HRED-300076

Description **About the Research**

Military operations depend more and more on an array of unmanned technology ranging from ground vehicles, air vehicles, sensors, and microsystems. The inclusion of unmanned systems, information networks, and advanced sensor suites, are intended to enhance operational performance and Soldier safety. However, the implications of these technologies for human use are not always fully understood nor are they always considered during design. The Soldier's role for interaction with unmanned systems is broad ranging from robot operator, through information manager, to information consumer. The goal of our HRI program is to maximize the effectiveness of integrating unmanned technology into the Soldier team through the development of state-of-the-art Soldier-system interactions. We seek to identify tools, techniques, and measures that can be used to improve and assess performance with unmanned systems across multiple environments. Specific issues to be addressed include: unmanned and manned vehicle autonomy, intuitive communications and interfaces, supervisory control, teaming, situation awareness, and strategies for workload management. ARL-HRED is currently conducting research on human-robot interaction (HRI) at Aberdeen Proving Ground. MD. Research environments for this research include laboratory, simulation, and field environments.

ARL Advisor: Kristin Schaefer-Lay

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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.

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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.org

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree.
- **Academic Level(s):** Any academic level.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Computer, Information, and Data Sciences** (16 👁)

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- **Earth and Geosciences** (21 👁)
- **Engineering** (27 👁)
- **Environmental and Marine Sciences** (14 👁)
- **Life Health and Medical Sciences** (45 👁)
- **Mathematics and Statistics** (10 👁)
- **Physics** (16 👁)
- **Science & Engineering-related** (1 👁)
- **Social and Behavioral Sciences** (1 👁)

- **Age:** Must be 18 years of age