

Opportunity Title: Endogenous & exogenous sources of variability

Opportunity Reference Code: ARL-R-HRED-300004

Organization DEVCOM Army Research Laboratory

Reference Code ARL-R-HRED-300004

Description About the Research

Understanding how naturalistic search behavior is guided by the relative influence of task specific demands and features of the environment is critical to interpreting visual perception in real world settings. This research opportunity will address critical gaps in our understanding concerning the interactive role of visual salience (bottom-up), task goals (top-down), and arousal (internal state) on target detection during overt visual search. Successful candidates will be involved in all aspects of scientific process from experimental design, data acquisition and analysis, and presentation and publication of results. This project will leverage behavioral, eye tracking, and electrophysiological methods to systematically investigate visual perception using both constrained and real-world tasks, leading to an enhanced understanding of visual search in everyday environments.

Keywords: visual search, eye tracking, real world, cognitive neuroscience, target detection, EEG, visual perception

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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 CCDC Army 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

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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@ora.u.org

Eligibility Requirements

- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 60 month(s).
- **Academic Level(s):** Any academic level.
- **Discipline(s):**
 - **Engineering** ([1](#))
 - **Life Health and Medical Sciences** ([1](#))
 - **Mathematics and Statistics** ([2](#))
 - **Other Non-Science & Engineering** ([1](#))