**Opportunity Title:** Characterization of Human Variability through Multi-faceted Assessment
**Opportunity Reference Code:** ARL-C-HRED-1431671849

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| **Organization** | DEVCOM Army Research Laboratory |
| **Reference Code** | ARL-C-HRED-1431671849 |
| **Description** | **About the Research** |

Human behavior has been studied for centuries and still remains poorly understood by the scientific community. Data collection and analytic tool development efforts to date overtly fail to capture the variability that is needed to characterize the dynamics of human behavior. Researchers have made trade-offs between experimental time periods and participant populations studied, resolution of data acquired, and the number of different facets of human assessment integrated (e.g., intended behaviors, unintended behaviors, physiology, subjective experiences, social interactions, environmental factors, and tasking). These trade-offs have limited the interpretability of human data and arguably, advancements in theory, modeling, as well as their applications to predicting behavior. Our goal is to extend theories regarding human behavior, incorporating multiple factors and their interactions, spanning multiple time scales across a large group of individuals, and to use these theories to develop novel methods to predict an individual's future performance. In contrast to previous efforts that made tradeoffs between resolution and time, we aim to leverage the recent explosion in wearable technologies, physiological monitoring, environmental sensing, communications, computing technology, network technologies, and analytic tools to validate and refine theories regarding the factors influencing human performance over time. The Associate will do research to characterize human variability and to develop novel methods to predict an individual's future performance. The Associate should have extensive experience in one or more of the following (or related) fields: Applied Mathematics, Behavioral Science, Big Data Analysis, Bioengineering, Computer Science, Electrical Engineering, Machine Learning, Mechanical Engineering, Neuroscience, Physiology, Probability and Statistics. The Associate must have an interest in applying these skills to characterize human behavior in real-world environments.

*ARL Advisor:* Amar Marathe

*ARL Advisor Email:* amar.marathe.civ@mail.mil

**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

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[ARLFellowship@orau.org](mailto:ARLFellowship@orau.org)

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| **Eligibility Requirements** | • **Citizenship:** U.S. Citizen Only |

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Academic Level(s):** Any academic level.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Computer, Information, and Data Sciences** (16 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (1 👁)
  - **Life Health and Medical Sciences** (45 👁)
  - **Mathematics and Statistics** (10 👁)
  - **Physics** (16 👁)
- **Age:** Must be 18 years of age