

Opportunity Title: Machine Learning for State Estimation and Decision

Propagation

Opportunity Reference Code: ARL-R-SEDD-1871527378

Organization DEVCOM Army Research Laboratory

Reference Code ARL-R-SEDD-1871527378

Description About the Research

ARL requires one full time engineering research scientist/engineer for a post-doctoral fellowship to support a program in Network of Networks to enable novel methods for agent learning, adaptation, and model distribution in highly heterogeneous environments where humans are coupled to machine decision agents. Specifically, the opportunity will develop novel theories, develop experiments to validate, and hardware to implement solutions to the problem of:

Given the advances made by the Google DeepMind project (and others) how can we enable both hierarchical and deeply integrated Human-in-the-Loop (HIL) reinforcement, transfer learning for heterogeneous agents, and extend these methods from simulation demonstrations to hardware in the loop mixed systems?

Recent graduate with a PhD in control systems, electrical, mechanical engineering, computer science, material science, mathematics, physics or other appropriate discipline.

This person will be expected to lead their own research efforts but participate within a highly collaborative research group. This person will be expected to publish first author efforts in peer reviewed literature; contribute technically to peer reviewed literature in diverse areas within and outside of the team; and, develop experimental and transition efforts across the team. This opportunity will involve a mix of skill sets ranging including a deep understanding of various machine learning, transfer and reinforcement learning techniques, developing theories supporting multi-agent learning, and transfer of learned behavior across heterogeneous agents. This project is expected to research fluidly in python, Linux, ROS, Matlab, C/C++.

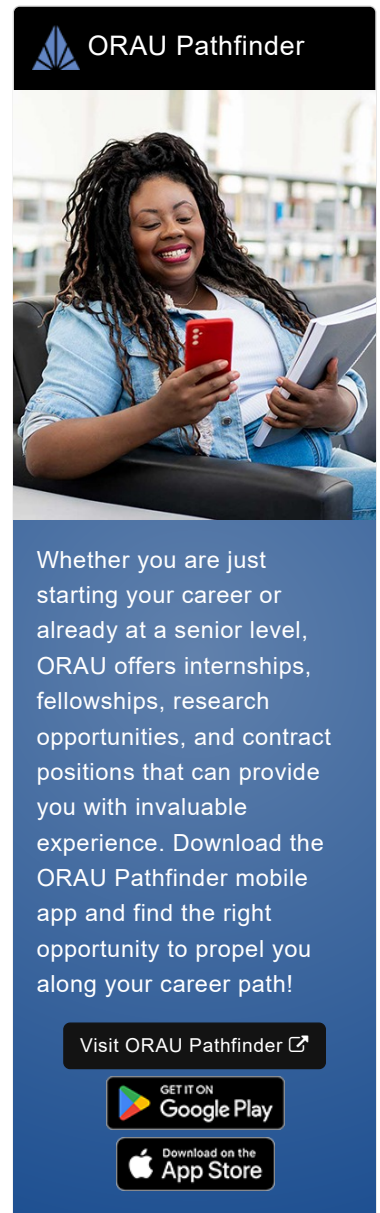
ARL Advisor: Joseph Conroy

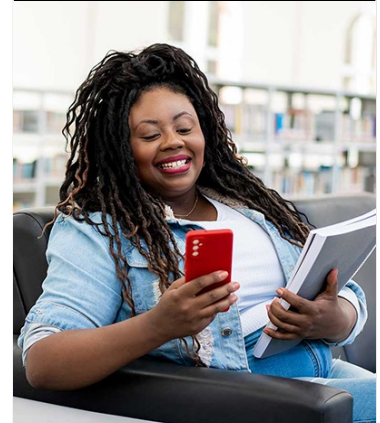
ARL Advisor Email: joseph.k.conroy3.civ@mail.mil

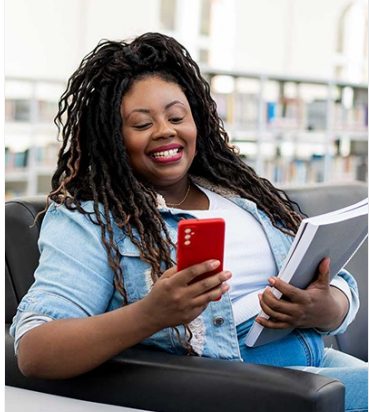
About SEDD

The Sensors and Electron Devices Directorate (SEDD) is the Army's principal center for research and development in the exploration and exploitation of the electromagnetic spectrum, which includes radio frequency, microwave, millimeter-wave, infrared (IR), visible, and audio regions. SEDD is responsible for advances in laser sources, RF sources, IR sensors, signature detection and decoding, target imaging and its interpretation, fusion of data derived from several sensors, and electromagnetic protection.


In addition, SEDD is responsible for improving the technology base for electron devices and materials related to sensors and power devices.





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Research is conducted in related aspects of physics, electrical engineering, computer science, solid-state physics, chemical engineering, material sciences, and electrochemistry.

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 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.

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Questions about this opportunity? Please email

ARLFellowship@orau.org

- Eligibility Requirements**
- **Degree:** Doctoral Degree received within the last 60 month(s).
 - **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