

Opportunity Title: Machine Learning and Artificial Intelligence Applications in Power Electronics and Power Devices

Opportunity Reference Code: ARL-C-SEDD-300057

Organization DEVCOM Army Research Laboratory

Reference Code ARL-C-SEDD-300057

Description About the Research

The CCDC. Army Research Laboratory is seeking a qualified researcher to perform work in the areas of machine learning (ML), artificial intelligence (AI), power electronics and power semiconductor devices. Qualified candidates must have recently obtained a bachelor's degree in Electrical or Computer Engineering and must currently be enrolled in a Master's or Ph.D. Degree in Engineering. The selected applicant will perform research in power semiconductor module-level AI/ML implementation on embedded systems. These systems will utilize new and existing sensor devices and techniques to allow the module to autonomously alter its trade space parameters.

Responsibilities of the selected applicant include:

- * Perform an extensive literature review of existing AI/ML algorithms
- * Design and build power semiconductor module prototypes with embedded computational power to execute AI/ML algorithms
- * Implement AI/ML algorithms in the embedded system
- * Setup a suitable testbed to analyze, test, identify and validate the benefits of the AI/ML implementation
- * Write reports and make presentations to document the outcomes of the research

ARL Advisor: Argenis Bilbao

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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.

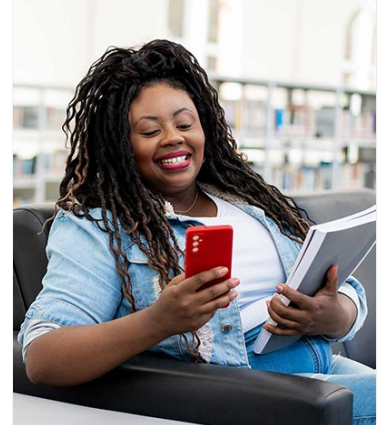
In addition, SEDD is responsible for improving the technology base for electron devices and materials related to sensors and power devices. Research is conducted in related aspects of physics, electrical engineering, computer science, solid-state physics, chemical engineering, material sciences, and 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



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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.

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

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| Eligibility Requirements | <ul style="list-style-type: none">• Citizenship: U.S. Citizen Only• Degree: Bachelor's Degree, Master's Degree, or Doctoral Degree.• Academic Level(s): Any academic level.• Discipline(s):<ul style="list-style-type: none">◦ Engineering (1 ) |
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- **Age:** Must be 18 years of age