Opportunity Title: Research with the Department of Systems Engineering at West Point

Opportunity Reference Code: ARL-R-USMA-DSE-400055

Organization	DEVCOM Army Research Laboratory
Reference Code	ARL-R-USMA-DSE-400055
How to Apply	Applications must be submitted in Zintellect.

A complete application includes:

1. **Curriculum Vitae or Resume**
   - List relevant coursework and lab experience as well as all papers, presentations, or publications you may have authored or co-authored. Include any reprints or abstracts if they are available.
2. **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)
3. **Transcripts**
   - Transcript verifying receipt of degree or current enrollment in an undergraduate or graduate program at an accredited university or technical institute. Student/unofficial copy is acceptable
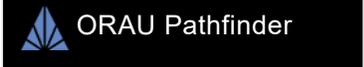4. **Research Proposal**
   - Research topic should relate to a specific opportunity at ARL
   - The objective of the research topic should be clear and have a defined outcome
   - Explain the direction you plan to pursue
   - Include expected period for completing the study
   - Include a brief background such as preparation and motivation for the research
   - References of published efforts may be used to improve the proposal

Description
The Department of Systems Engineering's (DSE) research program is relevant, interdisciplinary, and innovative, supporting Army and Department of Defense priorities through engaged scholarship and dedicated analytic capability. DSE houses two research centers: The Operations Research Center (ORCEN) and the Systems Design and Analysis Center (SDAC). The department partners with Army, DoD, government, and industry organizations to develop systems solutions and add value at and beyond USMA. Research fellows participate in applied research through cadet and faculty-led research projects, ensuring that theory is linked to practice and that cadets are prepared to thrive in complex and uncertain environments. Faculty and students in DSE collaborate on research that advances Army and DoD analytic capabilities, supports operationally relevant innovation, and develops the next generation of leaders and analysts for the Army and the Nation.

DSE Core Competencies and ORCEN Research Domains:
- Operations Research and Decision Science

- Data Analysis and Data Science (including machine learning and AI for defense applications)
- Systems Engineering and Engineering Management
- Industrial Engineering and Production Management
- Mathematical Modeling, Simulation, and Optimization
- Network Analysis and Geospatial Modeling
- Human Resource Management and Talent Optimization
- Maintenance Optimization and Readiness Analysis
- Cost Modeling and Requirements Engineering
- Performance Metrics and Visualization for Operational Readiness
- Integration of analytic insights into Army and Joint operations

Keywords: systems engineering, engineering management, operations research, decision science, data science, artificial intelligence, machine learning, human factors

Research Advisor

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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.

About USMA, DSE, and ORCEN

The United States Military Academy's mission is to educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character, committed to the values of Duty, Honor, Country. USMA is the oldest engineering school in the nation and is situated 55 miles north of New York City in the picturesque Hudson Valley. USMA's rigorous programs, quality faculty, and student-to-faculty ratio of 12:1 attract a student body of 4,400 of the nation's best.

The Department of Systems Engineering (DSE) at the United States Military Academy is a nationally recognized leader in systems engineering,

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engineering management, operations research, and data analytics education and research. DSE's mission is to educate, develop, and inspire leaders of character who identify, formulate, and solve complex engineering and socio-technical problems for the Army and the Nation. The department leverages an interdisciplinary, integrative approach that applies systems thinking, engineering design, data analysis, mathematical modeling, simulation, decision science, and project management to address real-world challenges.

Within DSE, the Operations Research Center (ORCEN) serves as a center of excellence for operations research and analytics. Since 1988, ORCEN has conducted reimbursable research for Army, Joint, and DoD organizations, leveraging West Point's operations research talent to support defense analytic requirements. ORCEN executes 8–10 research projects annually.

ORAU Fellows at USMA-DSE conduct applied research and engineering on projects that are aligned with the Army's and DoD's toughest systems engineering, operations research and decision sciences problems. They gain significant experience conducting stakeholder engagement, model development, and decision support.

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

Qualifications   The ideal candidate will possess a strong academic background in systems engineering, operations research, data science, or a closely related discipline. Demonstrated experience in analytical modeling, quantitative analysis, and problem-solving within complex systems is highly valued. Candidates should have proficiency in relevant software tools and programming languages (such as Python, R, MATLAB, or similar), as well as excellent written and verbal communication skills. Prior research experience, especially in defense, government, or interdisciplinary team environments, is preferred. The successful applicant will be self-motivated, intellectually curious, and able to work collaboratively with diverse stakeholders to address operational challenges and deliver actionable insights that support Army and Department of Defense priorities.

Point of Contact   ARL-RAP

Eligibility Requirements
- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree.
- **Academic Level(s):** Bachelor's Degree (Journeyman Fellow), Master's Degree (Journeyman Fellow), Master's Degree 7+ years (Senior Fellow), Doctoral Degree (Postdoctoral Fellow), or Doctoral Degree 5+ years (Senior Fellow).
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Communications and Graphics Design** (2 👁)

- **Computer, Information, and Data Sciences** (17 👁)
- **Earth and Geosciences** (21 👁)
- **Engineering** (29 👁)
- **Environmental and Marine Sciences** (14 👁)
- **Life Health and Medical Sciences** (51 👁)
- **Mathematics and Statistics** (11 👁)
- **Physics** (16 👁)
- **Science & Engineering-related** (2 👁)
- **Social and Behavioral Sciences** (29 👁)