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Opportunity Title: Research with the Department of Mathematical Sciences at West Point
Opportunity Reference Code: ARL-R-USMA-400054

Organization DEVCOM Army Research Laboratory

Reference Code ARL-R-USMA-400054

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 USMA
   - The objective of the research topic should be clear and have a defined outcome
   - Explain the direction you plan to pursue

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

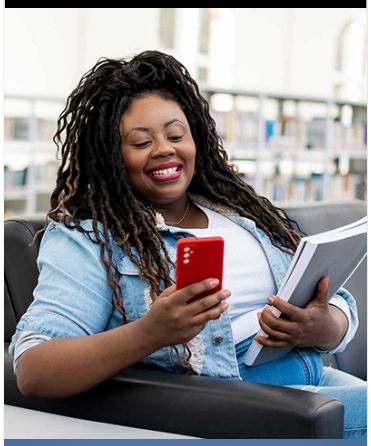
Description The Department of Mathematical Sciences conducts research in a wide variety of applied and pure mathematics, applied statistics, data science, operations research, engineering mathematics, computational mathematics, modeling, analysis, optimization, and mathematics education.

We offer varying fellowship opportunities (Senior Fellows, post-Docs, pre-Docs, post-Bacs, summer internships, etc.) to those interested in research in the following fields:

- Theory and application of machine learning and artificial intelligence including Natural Language Processing / Large Language Models, image classification and object detection and Aided/Automated Target Recognition or other applications of interest to the Army to improve warfighting, lethality, and readiness
- Theory and application of machine learning and artificial intelligence including predictive maintenance, predictive logistics, statistical analysis

DEVCOM ARMY RESEARCH LABORATORY

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of production data, statistical process control, or other applications of interest to the Army to improve warfighting, lethality, and readiness
- Data Science support for health and wellness, Holistic Health and Fitness, nutrition, obesity, human performance, wearables, sleep and immune function, human microbiome analysis, metabolomic analysis, cancer detection, and related analysis methods relating to the health and human sciences
- Multidisciplinary modeling
- Research in pure math topics including topology, abstract algebra, graph theory, and linear algebra
- Research in applied topics including linear algebra, numerical methods, and network science
- Cost / economic modeling; quantitative financial modeling and optimization
- Data fusion and multimodal machine learning
- Human resources / talent management using AI/ML and data science
- Modeling and optimization of Army systems and processes
- Theory and application of robust optimization
- Topological data analysis and other dimensionality reduction techniques
- Machine autonomy and autonomous frameworks for guidance, navigation or control of aerial and ground systems
- Cybersecurity and cryptography
- Mechanical, aerospace, electrical, industrial or systems engineering
- STEM outreach and recruiting
- Pedagogy and andragogy of mathematical sciences

Advisors

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About ARD

ARL's Army Research Directorate (ARD) focuses on exploiting concept development, discovery, technology development, and transition of the most promising disruptive science and technology to deliver to the Army fundamentally advantageous science-based capabilities through laboratory's 11 research competencies. This intramural research directorate also manages the laboratory's essential research programs, which are flagship research efforts focused on delivering defined outcomes.

About USMA

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*mathew.b.fukuzawa.mil@army.mil* 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

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body of 4,400 of the nation's best and brightest.

Point of Contact ARL-RAP

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Associate's Degree, Bachelor's Degree, Master's Degree, or Doctoral Degree.
- **Academic Level(s):** Associate's Degree (Journeyman Fellow), Bachelor's Degree (Journeyman Fellow), Master's Degree (Journeyman Fellow), Master's Degree 7+ years (Senior Fellow), Doctoral Degree (Postdoctoral Fellow), Doctoral Degree 5+ years (Senior Fellow), or Faculty.
- **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)