

Opportunity Title: Understanding Artificial Intelligence for National Security

Fellowship

Opportunity Reference Code: ICPD-2024-50

Organization Office of the Director of National Intelligence (ODNI)

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How to Apply **Create and release your Profile on Zintellect** – Postdoctoral applicants must create an account and complete a profile in the on-line application system. **Please note: your resume/CV may not exceed 3 pages.**

Complete your application – Enter the rest of the information required for the IC Postdoc Program Research Opportunity. The application itself contains detailed instructions for each one of these components: availability, citizenship, transcripts, dissertation abstract, publication and presentation plan, and information about your Research Advisor co-applicant.

Additional information about the IC Postdoctoral Research Fellowship Program is available on the program website located at: <https://orise.orau.gov/icpostdoc/index.html>.

If you have questions, send an email to ICPostdoc@orau.org. Please include the reference code for this opportunity in your email.

Application Deadline 2/28/2024 6:00:00 PM Eastern Time Zone

Description **Research Topic Description, including Problem Statement:**

Artificial Intelligence (AI) represents a new paradigm for the Intelligence Community. While AI promises to automate many collection and analytic processes, it does not come without significant risk. For example, machine learning algorithms such as deep learning neural networks are often opaque in their decision-making processes (termed the “Explainability Problem”) or may not comport with human values or decision-making standards (termed the “Alignment Problem”). Additionally, as more capable AI systems are given meaningful control over various types of systems, the ability to control or influence AI decision making diminishes (termed the “Control Problem”). As the IC continues to operationalize AI, it is paramount that we better understand and interdict these problems before they manifest in systems that are relevant to national security.

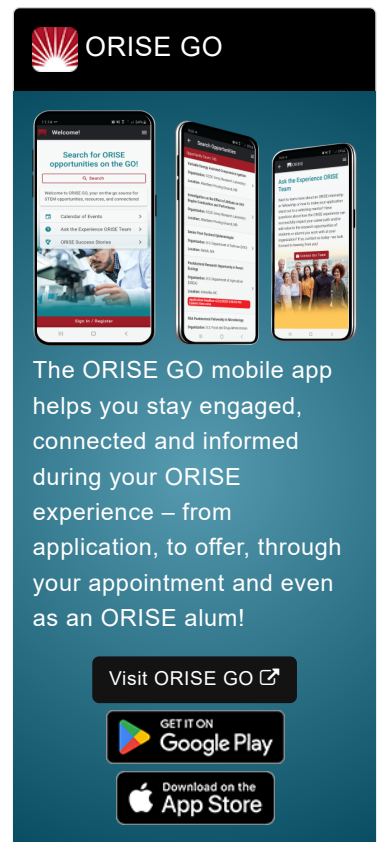
Example Approaches:

Develop mathematical models of decision-making in deep learning neural networks; Explore statistical methods of minimizing bias in training data sets; Examine potential game theoretic solutions to the Control Problem; Develop mathematical models of reinforcement learning systems; Examine mathematical approaches to understanding mesa optimization.

Relevance to the Intelligence Community:


Artificial Intelligence/Machine Learning (AI/ML). Artificial Intelligence – Autonomous Systems; Artificial Intelligence – Deep Learning; Artificial Intelligence – Information Assurance; Artificial Intelligence – Machine Learning; Data – Integration; Data – Modeling and Prediction; System of Systems – Networks; Other – Unexpected; Other – Convergent.


Key Words: Artificial Intelligence, Control Problem, Machine Learning, Deep Learning, Explainability, Alignment, Mesa Optimization, Complexity, Game




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Theory

Qualifications Postdoc Eligibility

- U.S. citizens only
- Ph.D. in a relevant field must be completed before beginning the appointment and within five years of the appointment start date
- Proposal must be associated with an accredited U.S. university, college, or U.S. government laboratory
- Eligible candidates may only receive one award from the IC Postdoctoral Research Fellowship Program

Research Advisor Eligibility

- Must be an employee of an accredited U.S. university, college or U.S. government laboratory
- Are not required to be U.S. citizens

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.
- **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#))
 - **Communications and Graphics Design** ([3](#))
 - **Computer, Information, and Data Sciences** ([17](#))
 - **Earth and Geosciences** ([21](#))
 - **Engineering** ([27](#))
 - **Environmental and Marine Sciences** ([14](#))
 - **Life Health and Medical Sciences** ([45](#))
 - **Mathematics and Statistics** ([11](#))
 - **Other Non-Science & Engineering** ([2](#))
 - **Physics** ([16](#))
 - **Science & Engineering-related** ([1](#))
 - **Social and Behavioral Sciences** ([30](#))