Opportunity Title: Machine Learning Trained Fingerprinting of the Near Field Measurement

Opportunity Reference Code: ICPD-2025-02

Organization	Office of the Director of National Intelligence (ODNI)
Reference Code	ICPD-2025-02
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.

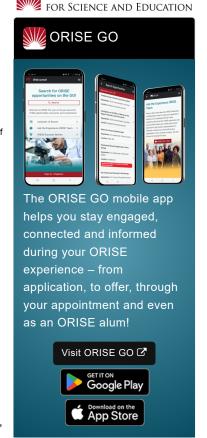|	
Application Deadline	2/28/2025 6:00:00 PM Eastern Time Zone
Description	**Research Topic Description, including Problem Statement:**

Electromagnetic (EM) shielding controls have widespread usage ensuring secure communication facilities do not emanate unintentional EM signals. Over the past few years near field measurement has been obtained with traditional multiprobe technique in combination with analytical functional evaluation to provide a measurement of the complex and dynamic EM field, however this approach introduces uncertainties in its measurement result due to dynamic field complexity within its surrounding. Recent advancement in Machine Learning (ML) with linear/non-linear mapping algorithms has exhibited novel techniques to solve complex analytical functions in real-time.

This topic looks for the development of fast and efficient ML integrated near field measurement within a dynamic and complex EM environment to provide fingerprinting of its surroundings for secure communication.

Example Approaches:

- Literature survey for the near field measurement of EM signals.
- Near field measurement of an EM surrounding.
- Development and application of the ML algorithms integrated into near field measurements.
- Real time measurement and response accuracy enhancement within a dynamic EM environment

For further reading please see following references: Wen, J et al., doi: 10.1109/TEMC.2020.3004251 Alavi, RR et al., doi: 10.1109/APUSNCURSINRSM.2019.8888868 Deschriiver, D et al., doi: 10.1109/TEMC.2011.2163821

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Key Words: Machine learning, Fingerprint, Near field, electromagnetic, EM, RF

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

Point of Contact Keri Tarwater

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 👁)