

Opportunity Title: 3D Computer Vision for Situation Awareness

Opportunity Reference Code: ICPD-2025-46

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 2/28/2025 6:00:00 PM Eastern Time Zone

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

Problem Statement: Given real-time Full-Motion Video data from multiple cameras with different view angles covering 360° view of the scene, solve the problem of multi-camera video fusion, 3D scene reconstruction or rendering, and 3D scene understanding to gain situational awareness of the people, objects, and their relative motion.

Example Approaches:

Neural Radiance Fields (NeRF) for novel views of complex 3D scenes based on partial set of 20 images, Hybrid Convolutional Neural Network (CNN)- Recurrent Neural Network (RNN) models, State Space Models for Time-Series, Mixture Density Network for estimating 6 DoF pose, Attention-based Scan Matching, Large Language Models (LLMs), and ChatGPT.

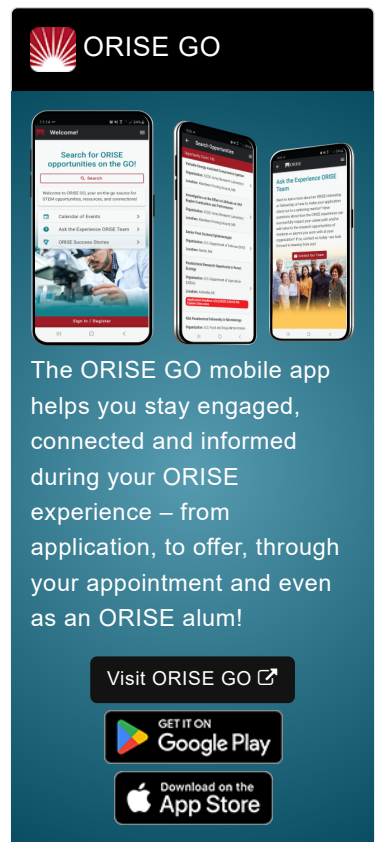
Relevance to the Intelligence Community:

Timing holdover in the absence of GPS, is a serious challenge. One way the DoD/IC is looking to address this is via portable and ultra-stable clocks. We aim to develop a clock capable of holding ns stability for month duration. The envisioned sensor will provide quality data to a resolution capable of supporting DOD's Alternative Positioning and Navigation applications.

Key Words: Video Understanding, Multi-Camera Fusion, Time-Series Data Preprocessing, 3D Scene Reconstruction, Computer Vision, Edge AI Accelerator, Video Question -Answering, Large Language Models, Prompt Engineering.


Qualifications **Postdoc Eligibility**


- U.S. citizens only




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- 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](#))