Opportunity Title: Novel Techniques for Plume Model Mapping
Opportunity Reference Code: ICPD-2021-10

Organization	Office of the Director of National Intelligence (ODNI)
Reference Code	ICPD-2021-10
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 2 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	2/26/2021 6:00:00 PM Eastern Time Zone
Description	**Research Topic Description, including Problem Statement:**

The purpose of this research project is to develop a novel model for both biological and chemical plumes released in either an open (neighborhood park) or closed (office space) environment with minimal information about the attack. On April 4, 2017, the town of Khan Sheikhoun in northwest Syria experienced one of the worst chemical attacks in recent history. A plume of sarin gas spread more than 10 kilometers, killing more than 80 people and injuring hundreds. Although researchers have investigated and developed plume models in the past, the lack of information could make such models irrelevant in future attacks. With the lack of chemical information and only eyewitness accounts and a handful of images to go off of, current chemical plume models many be reaching their limits.
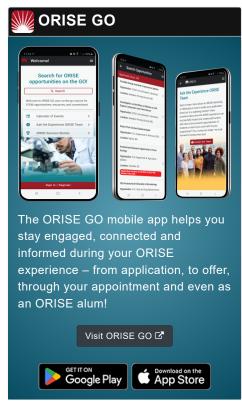
Example Approaches:

This project is looking for novel models that reduce the amount of information and variables needed to build a rigorous plume model for either an open or closed environment. Techniques for exploitation are computer vision, still imagery, weather predictions, environmental indicators, or other techniques that the researcher could utilize. A successful project will minimize the number of variables traditionally used for plume modeling and look at nontraditional variables and modeling techniques that will work on a number of biological and chemical materials.

Relevance to the Intelligence Community:

Understanding and predicting the motion of deadly plumes can have a multidimensional effect on a surrounding area including protecting civilian and military in the area, mapping out hazardous locations, and providing local, national, and international leaders with important information to make relevant and educated

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future decisions for an area.

Key Words: Plume Modeling, Chemical, Biological, Environment Modeling, Chemical Attacks

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 application deadline
- 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** (2 👁)
  - **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** (10 👁)
  - **Other Non-Science & Engineering** (2 👁)
  - **Physics** (16 👁)
  - **Science & Engineering-related** (1 👁)
  - **Social and Behavioral Sciences** (27 👁)