

Opportunity Title: Advanced research into archive, analysis and retrieval of video based data

Opportunity Reference Code: IC-18-34

Organization Office of the Director of National Intelligence (ODNI)

Reference Code IC-18-34

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:

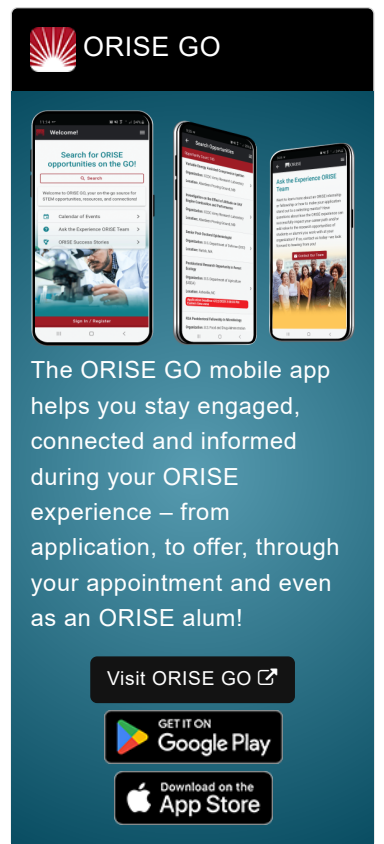
<https://orau.org/icpostdoc/>.

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

Application Deadline 3/12/2018 11:59:00 PM Eastern Time Zone


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


- Police and other agencies collect video data for a number of reasons. The video data are often used successfully as a means of providing evidence, building cases and aiding investigations. video data are collected, it is often from disparate sources and of varying quality. This makes job of searching through data particularly challenging. Technology does exist to make large corpuses of data searchable for specific tasks. However, the performance of these systems often falls below usable standards in operational settings. Approaches to this problem rely on classic “rules based” algorithms, such as video motion detection. Operationally, this presents a problem as the scenes from where data is captured will often have many objects moving. This can create a false alarm rate so high that it yields the system unusable. In addition, no standardized ontology is used in the classification of video data that would help in the efficient retrieval of achieved video content.
- The advances in video analytics, machine learning, processing power and Graphics Processing Units (GPUs) mean that there is much more potential to analyze and extract useful data in real-time or near-real time. It may be possible to classify data automatically and therefore make interrogation of that data much more efficient and accurate.
- These advances in research and technology may mean live detection of specific events and scene behaviors may also be possible.




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Example Approaches:

- Deep Neural Networks. This is in an active area of research, but little is known about the efficacy of such approaches for the security and intelligence communities. The use of Deep Neural Networks allows for efficient unsupervised learning of content to produce accurate results and attempts to define associations and commonalities across large corpuses of data. Whilst this is active research within the academic communities, it is unlikely that large datasets have been utilized and tested against that describe government requirements. Datasets that can be used for this purpose can be provided, if needed.
- Using open source deep-neural networks, such as TensorFlow to assess the performance of open source networks against video data. Applications like TensorFlow have been used against video hosting websites such as YouTube. However, the research will not have looked specifically at the types of video content, or requirements, for the security domain. By interrogating data this way, it may provide links to investigations where previously there have been no known links detection of specific events.
- Research through current academic activities. There are likely to be many novel approaches across the academic community that are involved with research within machine vision. This gives researchers the opportunity to apply their own innovations to specific scenarios. Datasets can be provided, if needed.







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** ([6](#) )
 - **Computer, Information, and Data Sciences** ([16](#) )
 - **Earth and Geosciences** ([21](#) )
 - **Engineering** ([27](#) )
 - **Environmental and Marine Sciences** ([14](#) )

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- **Life Health and Medical Sciences** ([45](#) )
- **Mathematics and Statistics** ([10](#) )
- **Other Non-Science & Engineering** ([5](#) )
- **Physics** ([16](#) )
- **Science & Engineering-related** ([1](#) )
- **Social and Behavioral Sciences** ([28](#) )