

Opportunity Title: Use of LIDAR for maintaining Speech Intelligibility with ASR

Opportunity Reference Code: IC-18-42

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 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:**

Maintaining intelligibility is fundamental to speech communications. In degraded conditions, microphone capture alone might not be sufficient to sustain intelligibility, prompting the exploratory combined use of alternate sensors. The research topic posed is whether light detection and ranging (LIDAR) scans, which are enabling detailed 3D models to be made, can be used in-part or in-full to successfully train an automatic speech recognizer (ASR) in degraded conditions. The underlying question is whether machine learning is able to both identify, and then effectively combine potential hidden vocal tract, lip and facial features to maintain intelligibility.

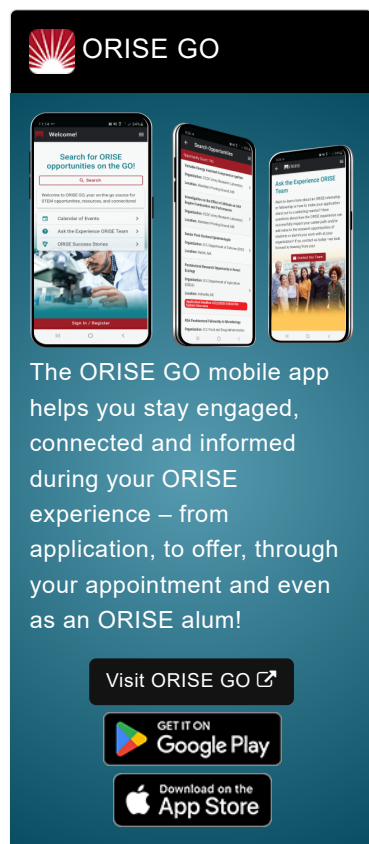
Example Approaches:

Three example approaches are listed:

- Use of LIDAR alone or in combination with a conventional microphone capture.
- Use of prior speaker information: enrolment utterances, videos of the person speaking.
- Consider use of microphone arrays, and alternative available sensors.

Note: No Human Subject Research is authorized for the IC Postdoctoral Research Fellowship Program.

Qualifications **Postdoc Eligibility**



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- 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](#) )
 - **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](#) )