Opportunity Title: Automated Intelligibility Tests Through the Use of AI or Novel Algorithms

Opportunity Reference Code: ICPD-2021-59

Organization	Office of the Director of National Intelligence (ODNI)
Reference Code	ICPD-2021-59

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:

Aim

Investigate the ability to perform measurably realistic intelligibility listening tests using AI or novel algorithms to increase the efficiencies of tests and improve the accuracy of repeated tests.
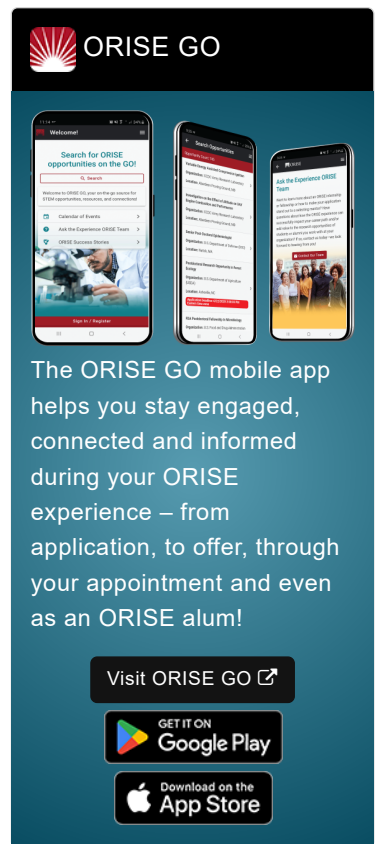
Problem Statement

Understanding the impact a device, component, or algorithm has on speech intelligibility is vital when designing or buying a product that captures or processes speech. At present, there are a few standard techniques to test intelligibility including; Speech Transmission Index (STI), Speech Intelligibility Index (SII), and listening tests. STI and SII are limited in their application and do not always accurately reflect the intelligibility impact from a system. The most accurate approach to date involves listening tests. Listening tests are both time and resource intensive, meaning their use is often restricted. In recent years, academia has been developing algorithms to calculate intelligibility metrics, and some of those metrics have been shown to have a one-to-one mapping with listening test data used by the developers. Whether the mappings remain consistent for different scenarios is currently unknown. Before a new algorithm can be adopted, it is important to understand the reliability of the algorithm and understand the circumstances or scenarios in which the algorithm can or cannot be used.

Example Approaches:

The researchers may wish to examine approaches and algorithms from different disciplines including, but not limited to, data science, acoustics, and hearing aid research.

Proposals could consider:

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- Understanding the latest techniques employed in listening tests.
- Researching a range of approaches and algorithms that exist that relate to speech intelligibility prediction.
- Understanding capabilities and limitations of approaches that could be used to reduce dependency on listening tests.
- If mapping between metrics and listening test data, the researchers may want to consider the data set used or perform independent listening tests.

Key Words: AI, Audio Testing, Speech Intelligibility, Speech Algorithms, Testing Efficiencies

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 👁)