Technology Commercialization Opportunity

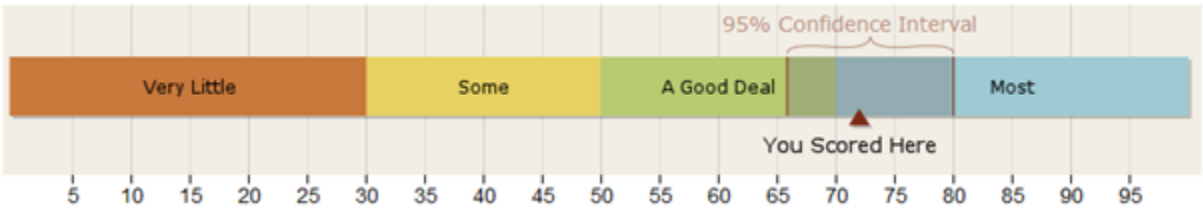
NTID Speech Recognition Test (NSRT®)

Background and Technology Description

Current approaches to the clinical assessment of speech recognition, such as conventional word recognition tests, tend to suffer from questionable reliability, validity and clinical utility. Available alternatives (e.g., signal-to-noise ratio tests) aren't much better.

The hearing healthcare industry needs a valid, reliable and practical measure of speech recognition reflecting an individual's speech perception ability in *actual communicative situations*. Such a measure would add value to clinical and rehabilitative practice by providing both performance and diagnostic information concerning a client's speech perception ability. This information can enhance the quality of clinical data, enabling improved estimation of the benefits expected from assistive devices and aural rehabilitation programs.

Such a measure of speech recognition has been developed at RIT and is known as the NSRT. Based on item response theory methodology, the adaptive testing procedure enhances measurement precision because of the systematic manner in which the ability level of each respondent is determined. The NSRT contains a large pool of items spanning a wide range of difficulty. Test items are automatically selected by a software procedure to fit a continuously updated estimate of the respondent's speech recognition ability in actual communicative situations which include their *ability to perceive speech in both quiet and noise*. The software adapts to each examinee. That is, stimuli are selected "on the fly" to probe categories of speech sounds revealed as problematic earlier in the test routine. In the graphical rendering below (output from the NSRT application), higher scores reflect greater speech recognition ability. An NSRT score corresponds roughly to the percentage of speech an individual is able to follow in everyday listening situations.



NSRT® Score Scale *© 2009 Rochester Institute of Technology*

NSRT was developed with funding from the National Institutes of Health and the National Technical Institute for the Deaf at Rochester Institute of Technology. The purpose of the funding was to develop a commercially viable computerized adaptive testing system to measure the speech processing abilities of persons with hearing loss.

Keywords: Hearing, Hearing Loss, Speech Recognition, Assistive Listening Devices, *Screening Test On-Line*

Technology Readiness
NSRT software is presently at this level of readiness:

Idea	Concept	Prototype	Alpha Version	Beta Version	***Released***

The software is a self-administered internet-based application accessible on both home and office computers, as well as wireless devices. The application is currently undergoing *market testing*.

Intellectual Property (IP): This technology is the subject of an issued U.S. patent 9,833,174

Applications
Possible applications, in addition to those cited above, include *hearing screening*, assessing communication difficulty, estimating age-related declines in speech recognition, and assisting in the diagnosis of auditory system pathology. Hearing screening results with NSRT have been found to conform to the ASHA Guidelines for Audiologic Screening in Adults in 96% of cases. In short, the computerized test-delivery system should enhance the quality of clinical services for patients and enable the providers of hearing healthcare services (i.e., audiologists and other specialists) to work in a more efficient and effective manner.

Each adaptive test requires about five minutes of administration time. The time required for one adaptive test and a small set of practice items is about 7 minutes.

Target Customers
- Hearing Healthcare Providers
- Hearing Instrument Manufacturers
- Kiosk Operators - Self Assessment
- Hearing Screening Providers

Opportunity
RIT's Intellectual Property Management Office (IPMO) is interested in working with those parties who are qualified and interested in the commercialization of NSRT. Arrangement types include licensing the application to existing or new organizations that have expertise in the field or related fields.

RIT's involvement in this research and academic field may provide a source of leads for consulting assignments to licensees who could subsequently bid and potentially fulfill the assignment.

RIT's researchers would provide training to any licensee and support enhancements to NSRT.

Contact
Those interested in learning more about this opportunity should contact:
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