Improved Speech Recognition for High-Frequency Hearing Loss

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Technology description

Background

With conventional hearing aid processing, individuals who have severe to profound mid- to high-frequency hearing loss still have great difficulty perceiving important speech information. Alternative processing strategies that move inaudible high-frequency information to lower frequency regions where hearing loss is less severe have been proposed; however, they all have a common flaw in that they tend to increase confusion between certain sounds, especially 's' and 'z'. The seriousness of this problem is illustrated by the fact that these sounds constitute about 8 percent of all spoken consonants in the English language.

Technology Summary

Purdue University researchers have developed a unique digital signal processing technique that recodes high-frequency speech information in a way that enhances perceptual differences between commonly confused speech sounds. In preliminary testing, the algorithm has worked better than commercially available alternatives, especially for the consonants 's', 'sh', 'ch', 'j', 't', 'k', and 'z'. No degradation in vowel recognition has been observed. The efficacy of using this technology for a broader range of hearing losses, including those with cochlear implants, is currently being tested.

Application area

Medical/Healthcare
Hearing Loss Technology

Advantages

Improved identification of consonants
Vowel degradation has not occurred

Preliminary testing shows improvement over current commercial alternatives

Institution

Purdue University

Inventors

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