Reduced noise allows clearer mobile phone conversations

February 19 2008

Dutch researcher Richard Hendriks investigated how background noises can be suppressed in order to provide better sound quality in applications such as mobile phones and hearing aids.

Speech-processing systems, such as hearing aids or mobile phones, are used in a wide variety of situations. A range of background noises such as traffic, music or voices can make it difficult for people to understand each other through equipment such as a telephone or a hearing aid.

Hendriks focused on improving speech and, in particular, on suppressing background noise. His aim was to improve the existing methods that make use of just one microphone.

First of all, Hendriks investigated how the power density spectrum of pure speech could be better estimated from the noise-distorted speech. Secondly, he examined how the speech signal could be better estimated from the disrupted signal by making use of improved statistical models. Finally, he took a closer look at a method for estimating the power density spectrum of the noise.

Hendriks then combined these three methods into a single all-encompassing system to improve the speech quality. Listening tests were used to compare the new system with an existing state-of-the-art system for improving speech quality. The new system was found to provide a significantly better quality.

As a follow-up to this study, the researchers from Delft have just started a project in partnership with a hearing aid company. This project will focus on how to improve the comprehensibility of speech for hearing aid users.

Richard Hendriks research was funded by Philips and Technology Foundation STW.

Source: NWO