

Towards pseudonymized speech

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Sharing speech recordings and speech data is important for progress in speech science and technology. However, sharing speech, whether for demonstration or for research, raises privacy concerns. There are many situations where we would like to be able to hide the identity of the speaker while still have "natural" sounding speech that exhibits all the linguistic and para-linguistic features of speech, i.e., pseudonymous speech. Current research in this direction tries to chain a speech recognizer and a speech synthesizer, e.g., a phone recognizer and a phone synthesizer, which removes the (para-)linguistically interesting aspects of the original speech. Here we explore a different approach with a continuous spectral transformation of speech using standard Praat functions, e.g., Change Gender. This results in intelligible speech varying in quality from near natural to clearly distorted. Identification in forced choice experiments is around 70% correct, both by (four) experts (range 62-75%, chance is 50%) and naive listeners (range 50-75%), indicating a loss of around 88% (range 81-99%) of the information needed for speaker identification. A final tool-box should allow users to make a trade-off between the level of pseudonymization and the preservation of relevant (para-)linguistic features. An English version of the ABX listening experiment is available from:

<http://www.fon.hum.uva.nl/rob/PseudonymizedSpeechExp/>