Title: Neural tracking of speech features: applications in hearing research

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Abstract:

Modern signal processing techniques allow to measure to what extent features of natural continuous speech signals are present in the brain. These features include purely acoustical ones such as the temporal envelope, but also higher-level ones such as semantic or linguistic representations. Relating stimulus features with brain signals (EEG) allows to study how the brain processes speech and has a plethora of applications. We will review the research in our lab regarding speech features, applications in hearing diagnostics, smart hearing aids (auditory attention decoding), coma diagnostics and aphasia, and advanced signal processing and deep learning to relate brain signals and stimulus features.

Bio:

Tom Francart, born 1981 received the Ph.D. degree in engineering from the University of Leuven, Belgium, in 2008. Since 2013 he is a research professor at the University of Leuven and since 2022 full-time tenured professor. The mission of his lab is to improve communication through technology. His research interests include objective measures of hearing (including EEG-based measures), auditory prostheses (including smart hearing devices) and general audiology and auditory neuroscience. His work follows a multidisciplinary approach that links electrical engineering with audiology and neuroscience. This research comprises the entire chain from fundamental curiosity-driven research towards applications in clinical practice, and eventually impact in society.