

Models of speech perception

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The aim of the talk is to develop an argument for a model of speech perception that uses multiple levels of abstraction for robust speech recognition and that argues for an 'informational' approach to speech perception. In a first part of the talk I will make an argument for multi-resolution analysis of speech signals. I will review evidence showing that human listeners use sophisticated mechanisms for segregating speech from background noise which require speech to be analysed at multiple levels - we need to consider very fine details of the signal to allow us to segregate speech from background noise but we also need to ignore detail to allow robust matching of highly variable patterns. In a second part of the talk I will argue that the underlying representations are of an 'informational nature' what I mean with this is that speech perception can to a large degree be explained by the nature of the acoustical signal rather than by more abstract representations such as, for instance, acoustic features.

In a will review data that suggests that consonant intelligibility in noise is much better predicted by local signal to noise ratio than by phonetic features and present a model for speech intelligibility that is based on an information theoretic measure of information in a auditory representation of speech signals.