Speech Communication in the Wild

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Abstract

Much of what we know about speech perception comes from laboratory studies with clean, canonical speech, ideal listeners and artificial tasks. But how do interlocutors manage to communicate effectively in the seemingly less-than-ideal conditions of everyday listening, which frequently involve trying to make sense of speech while listening in a non-native language, or in the presence of competing sound sources, or while multitasking? In this talk I'll examine the effect of real-world conditions on speech perception and quantify the contributions made by factors such as binaural hearing, visual information and prior knowledge to speech communication in noise. I'll present a computational model which trades stimulus-related cues with information from learnt speech models, and examine how well it handles both energetic and informational masking in a two-sentence separation task. Speech communication also involves listening-while-talking. In the final part of the talk I'll describe some ways in which speakers might be making communication easier for their interlocutors, and demonstrate the application of these principles to improving the intelligibility of natural and synthetic speech in adverse conditions.

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