Robust Formant Tracking in Echoic and Noisy Environments

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Abstract

We recently introduced a computationally efficient system for tracking formants. It combines a biologically inspired preprocessing for enhancing formants in spectrograms with a probabilistic framework for estimating formant trajectories. In contrast to previously published approaches our tracking scheme relies on the joint distribution of formants rather than using independent tracking instances for each formant separately. In this talk I review our algorithm and further demonstrate its robustness for speech degraded by noise and echoes. Therefore, a comprehensive evaluation on a large publicly available database containing hand-labeled formant trajectories has been carried out. The results show significant performance improvements compared to state of the art approaches. I finally present a real-time system in which a feature-based resynthesis is used to assess the quality of the formant extraction.