

Comparison and evaluation of animal vocalization enhancement techniques.

Jidong Tao and Michael T. Johnson. (Dept. of Electrical and Computer Engineering, Marquette University, Haggerty Hall, Milwaukee, WI 53201, jidong.tao@marquette.edu).

Animal vocalization recordings are often corrupted by wideband background noise and interfering signals; however, signal processing methods for enhancement of these waveforms has not received as much attention in the literature as has human speech enhancement. In order to improve vocalization intelligibility and quality, a variety of enhancement methods taken from the field of speech processing are investigated here. These techniques range from traditional approaches such as spectral subtraction to more advanced ones such as Ephraim Malah log-spectral estimation and wavelet denoising. Results, measured by improvement in signal-to-noise ratio (SNR) and subjective perceptual tests, are given for several noise environments. Signal enhancement is demonstrated across a variety of species, including African elephant, Beluga whale, and ortolan bunting vocalizations. [Work supported by NSF]