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(54) Title: NEURAL NETWORK CLASSIFIER FOR SEPERATING AUDIO SOURCES FROM A MONOPHONIC AUDIO SIGNAL

(57) Abstract: A neural network classifier provides the ability to separate and categorize multiple arbitrary and previously unknown audio sources down-mixed to a single monophonic audio signal. This is accomplished by breaking the monophonic audio signal into baseline frames (possibly overlapping), windowing the frames, extracting a number of descriptive features in each frame, and employing a pre-trained nonlinear neural network as a classifier. Each neural network output manifests the presence of a pre-determined type of audio source in each baseline frame of the monophonic audio signal. The neural network classifier is well suited to address widely changing parameters of the signal and sources, time and frequency domain overlapping of the sources, and reverboration and occlusions in real-life signals. The classifier outputs can be used as a front-end to create multiple audio channels for a source separation algorithm (e.g., ICA) or as parameters in a post-processing algorithm (e.g. categorize music, track sources, generate audio indexes for the purposes of navigation, re-mixing, security and surveillance, telephone and wireless communications, and teleconferencing).



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