CLASSIFIED HIGHBAND EXCITATION FOR BANDWIDTH EXTENSION OF TELEPHONY SIGNALS (ThuAmPO4)

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Abstract :

Current telephone networks compromise bandwidth for efficiency. The impairment of the audio quality in telephony has become a problem for the rapidly emerging sophisticated wideband telecommunications systems. We present a classified bandwidth extension algorithm which recovers the missing highband portion of telephony signals. We describe a new highband excitation generator, a Pitch−Synchronized−BandPass−Shifted−Sum excitation for strongly harmonic signals such as some voiced phonemes or some music audio signals. For other signals, a BandPass Envelope Modulated Gaussian Noise is used as the highband excitation. The highband spectrum envelope and the excitation gain are estimated using classified Gaussian Mixture Models. Objective measurements of spectrum sections and informal subjective tests of both reconstructed telephony speech and audio signals show more highband harmonic textures for strongly−harmonic signals than previous bandwidth extension methods.

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