VOICE PROCESSING BY SPECTRAL MODELS

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Abstract

Spectral Models, as their name suggests, deal with the spectral characteristics of the audio, that is, with its frequency domain content. The human auditory system performs a spectral analysis of the air pressure waves getting into the ears and, therefore, we can say that Spectral Models are closely related to the human auditory perception. Indeed, their parameters can be easily mapped to changes of sensations in the listener. Yet, parameter spaces yielded by these systems are not necessarily the most natural ones for manipulation. Typical controls would be pitch, glottal pulse spectral shape, formant frequencies, formant bandwidths, etc. Of particular relevance is the sinusoidal based system in . Explored spectral models and voice processing techniques that specifically tackle the characteristics of the singing voice, and we point out the most relevant problems and difficulties we found. We explain that voice utterances can be interpreted as a sequence of filtered time-domain voice pulses or as a set of time-varying frequency components. Each interpretation leads to different processing techniques, which are discussed . In addition, at the end we introduce two spectral models specially devised for the human voice.

keyword : *spectral model ,voice processing techniques,singing voice,frequency domain*