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Abstract
This thesis is intended to reduce the computational complexity for the core of MPEG-4 Harmonic Vector eXcitation Coding (HVXC). We'll briefly discuss the Spectrum Envelope Vector Quantization (SEVQ), the main core of HVXC, to realize the reason why it has the advantages of low bit-rate and high synthesis speech quality. Wang et al. introduced the Psychoacoustic model and proposed the Simplified hearing-base SEVQ (SSEVQ) to reduce the computational complexity. The mistake of SSEVQ is discussed and then a new structure, called Grouped SEVQ (GSEVQ), is proposed to reduce the computation required for SEVQ. In addition, the perceptual weighting in SEVQ can be in conjunction with the searching process of code vector; the perception combined SEVQ (PSEVQ) is then proposed. Furthermore, correct performance measurements, the weighted SNR and the weighted segmental SNR, are established for SEVQ. The performance and complexity are also included for the GSEVQ and PSEVQ approaches.
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