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A technique is presented for detecting glottal excitation epochs in the speech signal, using Hilbert envelope for enhancing the glottal excitation and maximum-sum subarray for marking the epochs. The processing comprises the steps of dynamic range compression, Hilbert envelope calculation, saliency enhancing, and epoch marking. The dynamic range compression reduces the amplitude variation of the signal. The Hilbert envelope enhances the glottal excitation. The saliency enhancing further enhances the instants of significant excitation by reducing the residual ripples related to the vocal tract filter, by using a dynamic peak detector, a nonlinear smoother, and a differentiator. The epoch marking locates the peak of the maximum-sum subarray as the instant of significant glottal excitation. Evaluation of the proposed technique showed its performance measures to be similar to those of the state-of-the-art techniques for normal speech, telephone-quality speech, and highpass filtered speech and better than or similar to them for pathological speech. The averaged accuracy-weighted identification rates with the proposed technique for normal speech, telephone-quality speech, and pathological speech were 79.46%, 77.04%, and 71.52%, respectively. The proposed technique employs single-pass processing and may find applications in speech training aids, diagnosis of speech disorders, and voice conversion of speech with voice disorders.