Time Scale Modification of Music Signal Using Harmonic-Percussive Separation

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Abstract

This paper presents an algorithm for time scale modification (TSM) of music signal based on Harmonic-Percussive Separation. The main problem in time scale modification of music signal is because of transients at note onsets in original music signal. These transients cause the time scaled result into stuttering distortion or loss of presence of original music. Many algorithms were developed to reduce transient problems of music and to commercially use the Time Scale Modification upon audio. In this paper, we solve transients problems of time scale modification by first separating the music signal into harmonic component which contains the sound components that slow variation in amplitude over time and percussive component which contains transients of input music. Median filter is used for Harmonic-Percussive Separation. The harmonic component is modified with frequency domain phase locked vocoder approach and the percussive component is processed with time domain overlap add approach. Finally, the modified harmonic component and the modified percussive component are superposed to get the time scaled music.