SEPARATION OF DRUMS FROM POLYPHONIC MUSIC USING NON−NEGATIVE MATRIX FACTORIZATION AND SUPPORT VECTOR MACHINE (ThuPmOR5)

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Abstract :

This paper presents a procedure for the separation of pitched musical instruments and drums from polyphonic music. The method is based on two−stage processing in which the input signal is first separated into elementary time−frequency components which are then organized into sound sources. Non−negative matrix factorization~(NMF) is used to separate the input spectrogram into components having a fixed spectrum with time−varying gain. Each component is classified either to pitched instruments or to drums using a support vector machine (SVM). The classifier is trained using example signals from both classes. Simulation experiments were carried out using mixtures generated from real−world polyphonic music signals. The results indicate that the proposed method enables better separation quality than existing methods based on sinusoidal modeling and onset detection. Demonstration signals are available at http://www.cs tut.fi/~heln/demopage.html.

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