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# Towards an adaptive subspace-based representation of musical spectral content

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This study presents an algorithm based on an adaptive framework model for musical sound signals assumed to be composed of slowly varying frequency components surrounded by additive noise. These components appear as contours in a time-frequency representation, as for instance, a spectrogram. To extract these contours, an often used solution is to estimate the parameters (amplitude, frequency and phase) of each component at each frame and then to link them from one to the next with the help of a distance measure or an HMM. Conversely, our method attempts to *update* the estimated values from one time instant to the next. It relies on principal subspace tracking (with respect to time) together with gradient descent to individually update each of the component parameters. Finally, each extracted contour, which represents the frequency and amplitude variation of a single component, is available for subsequent processing. Applications are demonstrated in the fields of Harmonic Plus Noise decomposition and analysis/transformation/synthesis.
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