What is the paper about?

Thursday, October 29, 2020 3:06 PM

<u>The goal of this paper is to review, categorize, and compare some of the most commonly used techniques for onset detection.</u>

Methods based on the use of explicitly predefined signal features:

- Amplitude envelope
- Spectral magnitudes and phases
- Time-frequency representations

and methods based on probabilistic signal models:

- Model-based change point detection
- Surprise signals

have been discussed.

What is onset?

Transients are short intervals during which the signal evolves quickly in some nontrivial or relatively unpredictable way. The *onset* of the note is a single instant chosen to mark the temporally extended transient.

How to detect onset?

The procedure employed in the majority of onset detection algorithms *is* :

- From the original audio signal, which can be pre-processed to improve the performance of subsequent stages,
- a detection function is derived at a lower sampling rate,
- to which a peak-picking algorithm is applied to locate the onsets.

Detection function is a signal which reflects the local structure of the original signal in a simplified form.

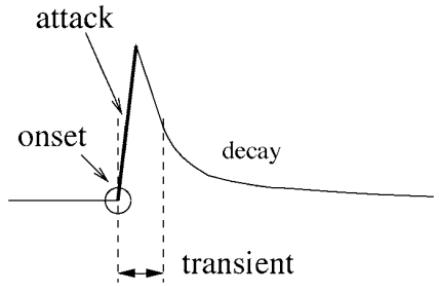

Fig. 1. "Attack," "transient," "decay," and "onset" in the ideal case of a single note.

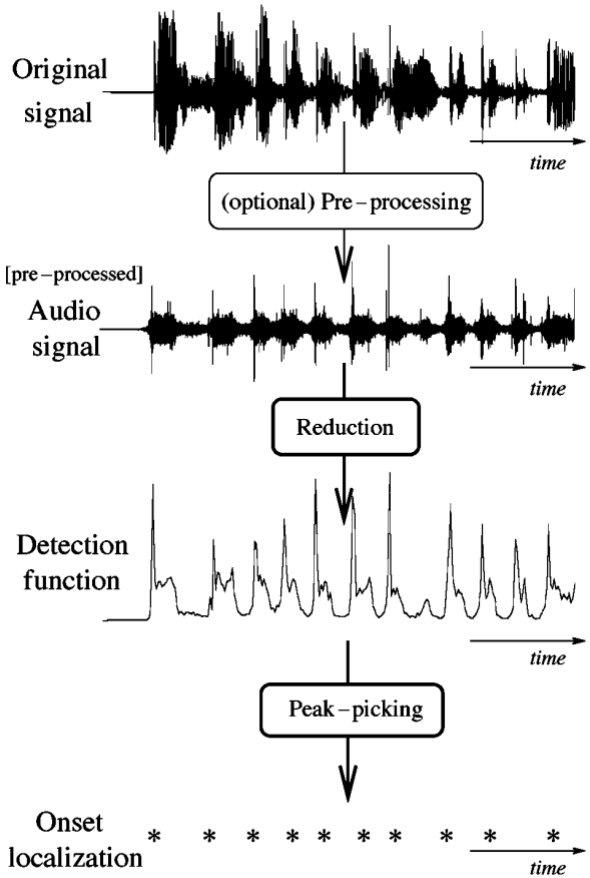

Fig. 2. Flowchart of a standard onset detection algorithm.