AN ERROR CORRECTION FRAMEWORK BASED ON DRUM PATTERN PERIODICITY FOR IMPROVING DRUM SOUND DETECTION

Kazuyoshi Yoshii ¹ Masataka Goto ² Kazunori Komatani ¹ Tetsuya Ogata ¹ Hiroshi G. Okuno ¹ (contact: yoshii@kuis.kyoto-u.ac.jp)

- 1 Graduate School of Informatics, Kyoto University
- ² National Institute of Advanced Industrial Science and Technology (AIST)

Backgrounds

Demands for content-based music retrieval systems

- There is a large amount of music recordings, which often have no metadata of titles and artists.
- It is desirable to support multi-modality of queries: query by genre/hamming/example.

Importance of drum sound detection for rhythm-content description

- Most popular songs include drums, which play an important role for keeping the rhythm.

Motivation

Objective: to improve accuracy of drum sound detection for polyphonic audio signals

- → We try to correct detection errors in a post-processing stage.
- Drum patterns (higher-level content) can be used as constraints for onset periodicity.

Key point

- how should we define "drum patterns"? -

"Drum patterns" are defined not as <u>segments delimited by bar-lines</u> but as <u>periodic structures</u>.

conventional definition our definition

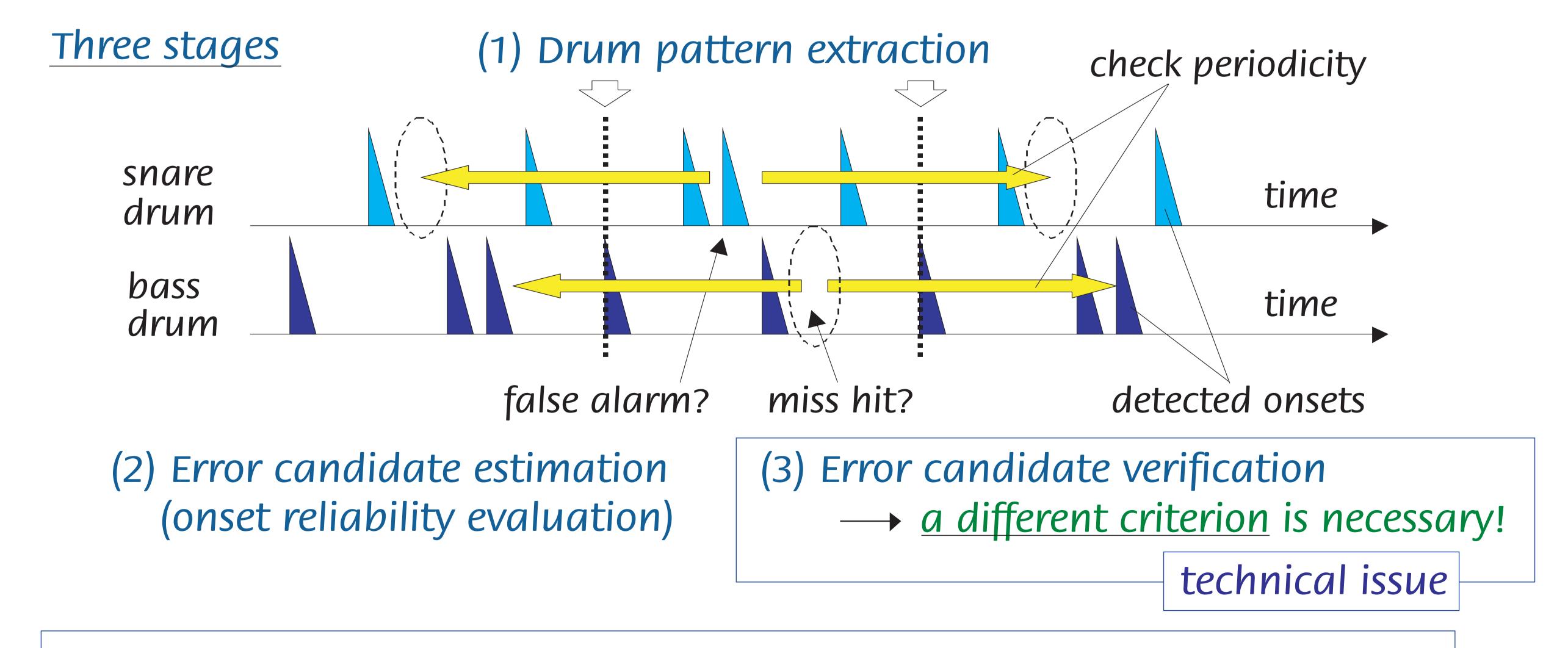
If we adopt the conventional definition...

- Nonperiodic patterns are not useful for the periodicity-based error correction.

Concept

Error correction framework based on periodicity of drum patterns

- 1. Periodic structures are extracted from detected imperfect onset sequences.
- 2. Potential/unreliable onsets found as deviations from the periodicity are verified.



- Interaction between low-level content (onsets) and higher-level content (patterns)
- Integration of bottom-up processing (extraction of patterns from onset sequences) and top-down processing (error correction of onsets based on pattern periodicity)

contributions