

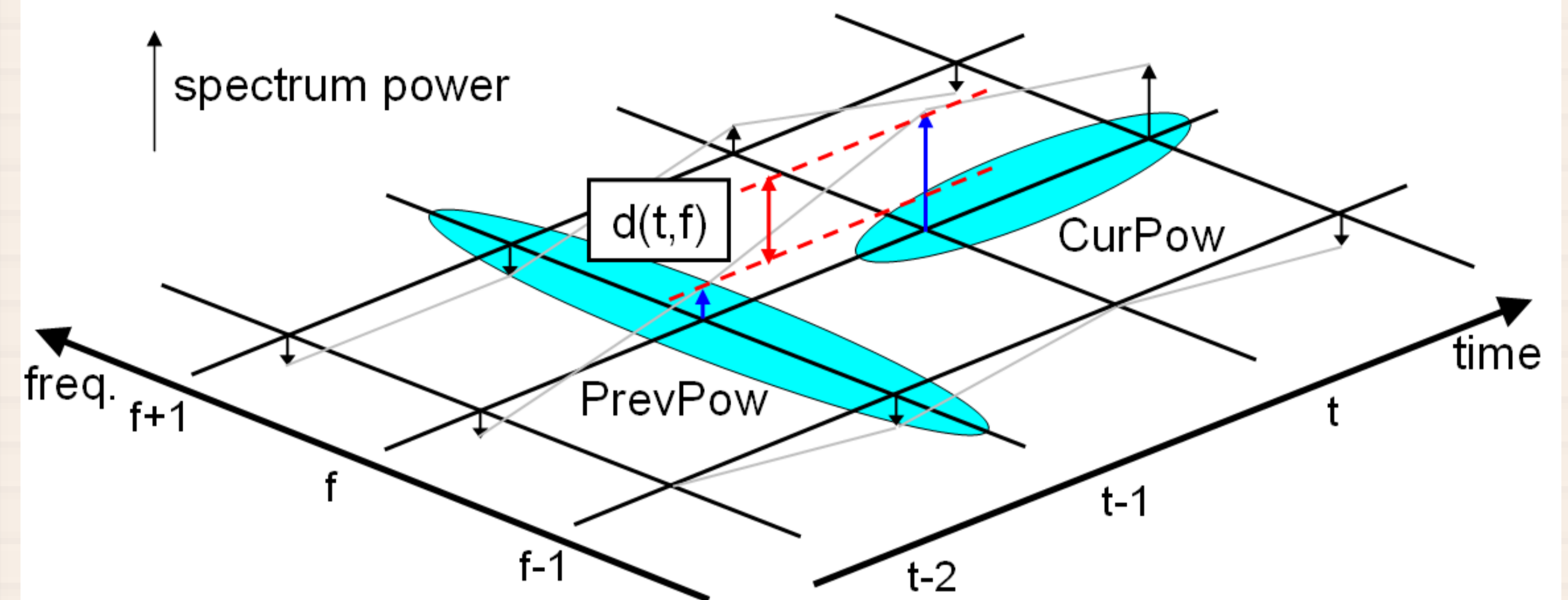
The Motion & Music Relationship Model for Dance Performances - Analyzing Dance Structure Using Motion and Music Sequences -

Takaaki Shiratori Atsushi Nakazawa Katsushi Ikeuchi

→ What is a Dance Key Pose?

- A whole body stops moving.
= Stop Motions
- Key poses appear at the music rhythm frame.
 - People dance to the rhythm of music.

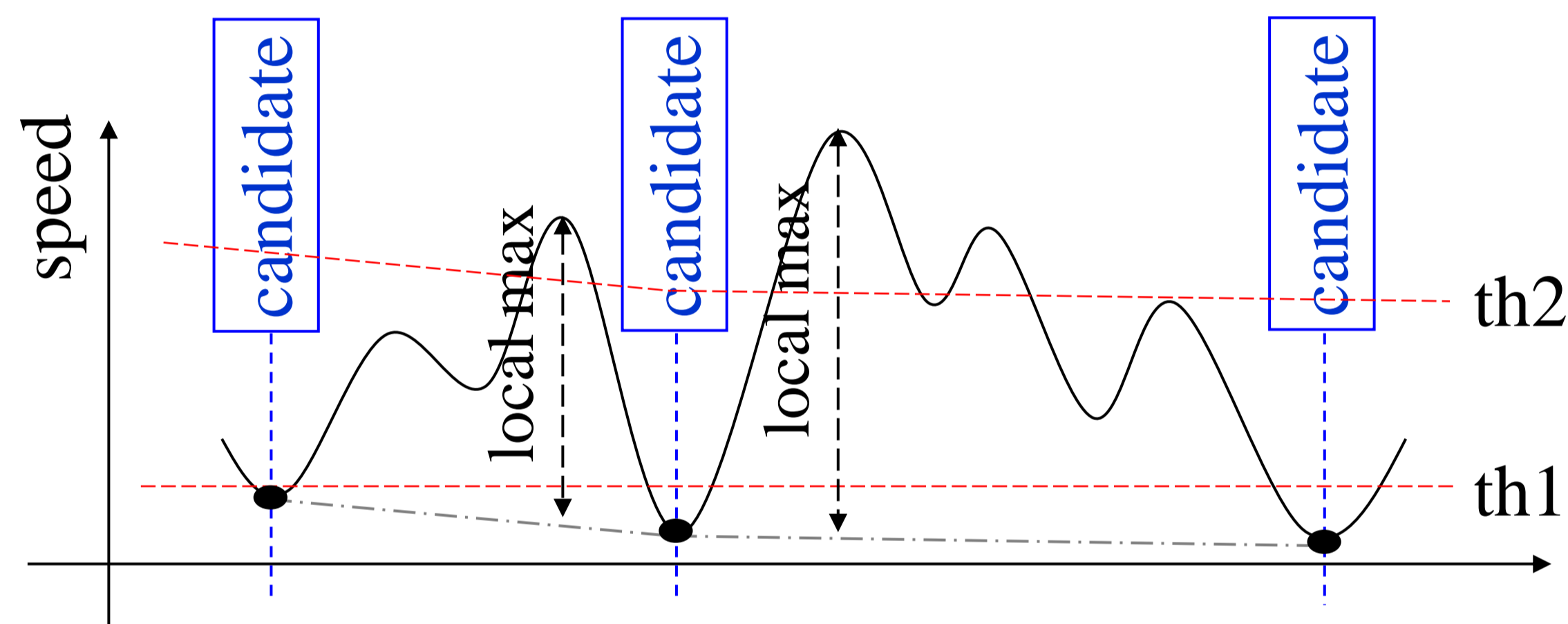
→ Beat Tracking from Music



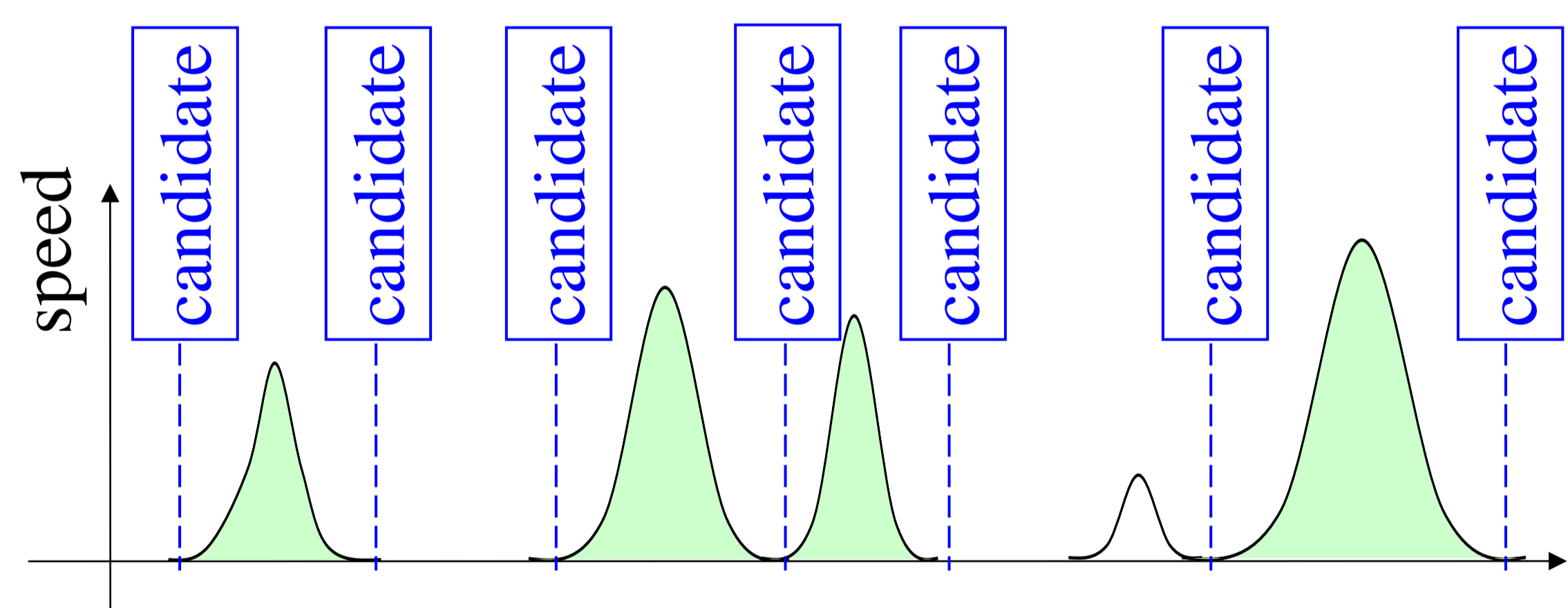
$d(t,f)$: how much power increases from previous time frame
→ Correlation of $d(t,f)$ can estimate beat time.

→ Key Pose Candidates from Motion

For Hands & CM :

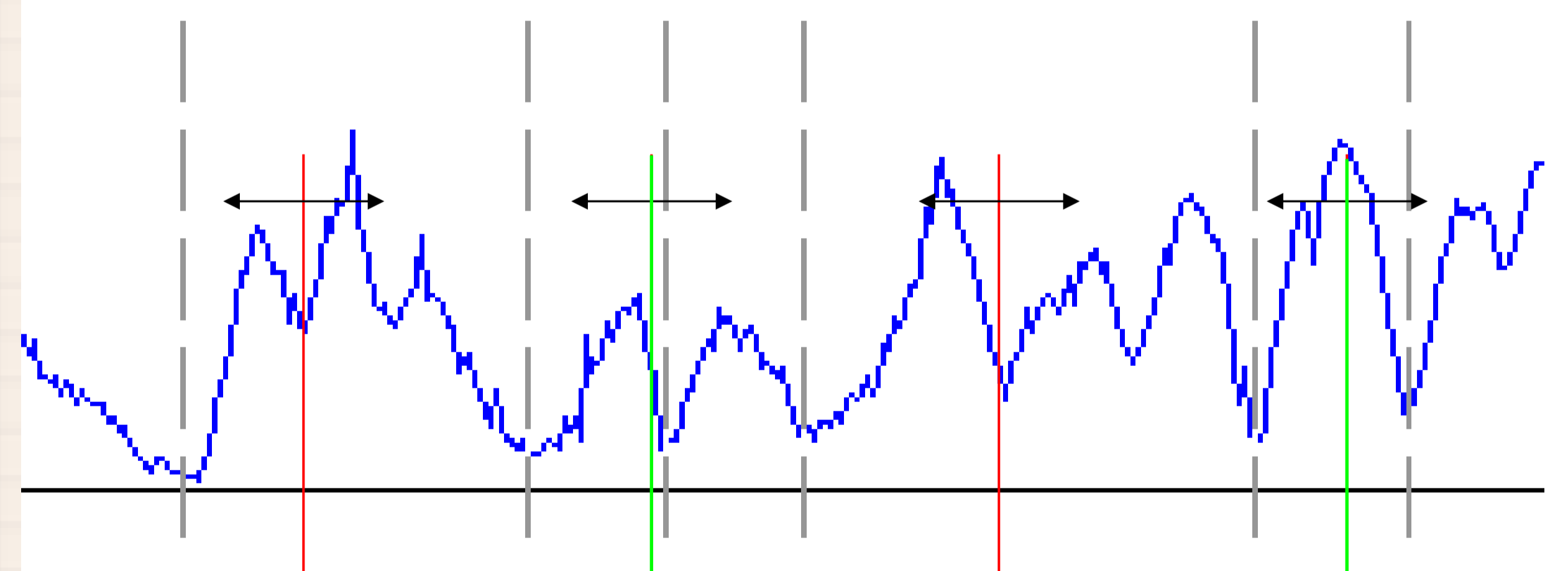


For Feet :



→ Key Poses Detection

Check if each body part stops moving at music rhythm frame.



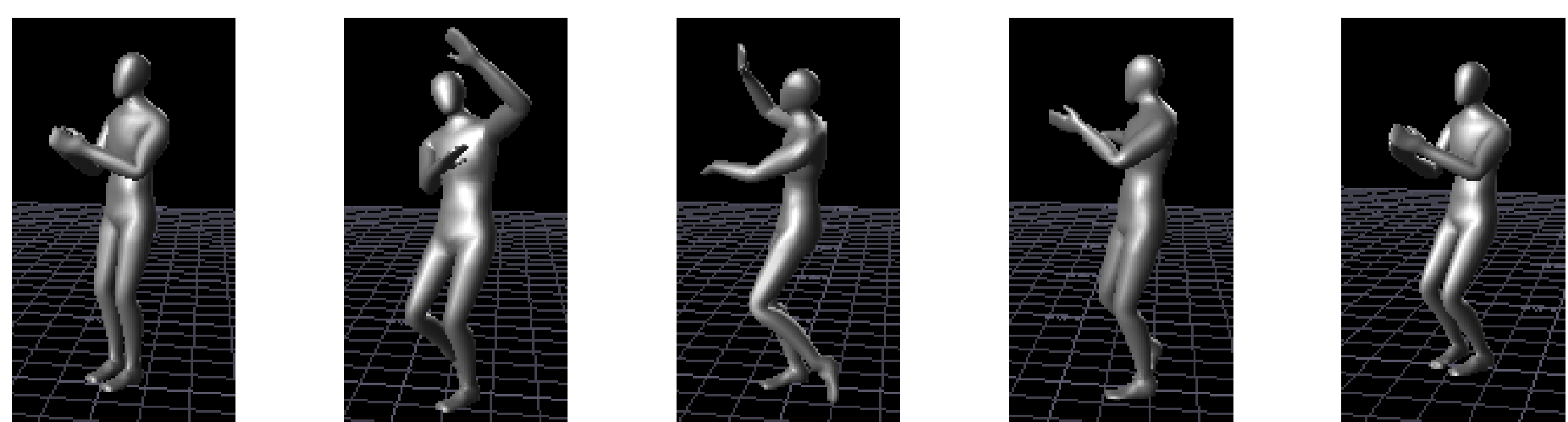
broken lines : key pose candidates
straight lines : music rhythm

→ Result – Detected Key Poses

Key Poses
from Dance Textbook



Key Poses
Detected by Our Method



Publications:

T. Shiratori, A. Nakazawa and K. Ikeuchi, "The Structure Analysis of Dance Motion Using Motion Capture and Musical Information," *IEICE Transactions on Information & Systems D-II*, to appear in August 2005 (in Japanese).

T. Shiratori, A. Nakazawa, K. Ikeuchi, "Detecting Dance Motion Structure through Music Analysis," in *Proceedings of IEEE International Conference on Automatic Face and Gesture Recognition*, May 2004.