

Humming file

Pitch Extraction by
Musical Note Estimation

Removing 0 Components of
Extracted Features

Normalization

(Mean-shifting, Median and Average Filtering, Min-max Scaling)

Calculating
the Score
with MIDI
data by
**pitch-
based LS**

Calculating
the Score
with MIDI
data by
**pitch-based
DTW**

Calculating
the Score with
MIDI data by
**QB code-
based LS**

Calculating the
Score with MIDI
data by **local
maximum and
minimum point-
based LS**

Calculating the
Score with MIDI
data by **pitch
distribution
feature-based
LS**

Score Fusion based on
PRODUCT Rule

Searching the Genuine
MIDI file in the Database