

# Music Representation, Indexing and Retrieval at NTHU

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In this extended abstract, our work on the representation, indexing and retrieval of music data is summarized. We treat the rhythm, melody, and chords of a music object as music features and develop various data structures and algorithms to efficiently perform approximate and partial matching for the retrieval of music data [Liu99a], [Chen98], [Chou96]. In [Chen00a], we present the techniques for retrieving songs by *music segments*. A music segment consists of a segment type and the associated beat and pitch information. We also propose multi-feature index structures for exact and approximate searching on different features [Lee00].

The problem of feature extraction is also studied. The *repeating pattern* is defined as a sequence of notes, which appears more than once in music objects. Choosing repeating patterns as the feature to represent the music objects meets both efficiency and semantic-richness requirements for content-based music data retrieval. We propose approaches to efficiently discover the repeating patterns of music objects in [Hsu98], [Liu99b].

We have also implemented *Muse*, a prototype system for content-based music data retrieval to illustrate the feasibility of the concepts we propose.

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