

Title	Data structure for multi-layered digital score
Author(s)	霜坂, 秀一
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Description	Supervisor: 東条 敏, 先端科学技術研究科, 修士(情報科学)

Content-Based Musical Retrieval (CBMR) intends to figure out the methods for performing search and retrieving information efficiently from digitized music scores. Since the current objective of CBMR is primarily to get similar musical patterns using monophonic or polyphonic queries, no method has been proposed to extract similar occurrences using the structural information on music such as a key or a harmonic progression. (e.g. find the measures from digitized scores that have a II-V-I harmonic progression)

In this thesis, multi-layered data structure containing scores, key and harmonic information will be proposed along with algorithms that realize the search. The proposed data structure and the algorithms allow searching through a progression of key or harmony, which satisfies the needs to explore music that has a similar musical structure. In particular, people will be able to view the music score as a search result of a query of key or harmony by using the data structure which contains information about the opus number, the measure number, the key and the harmony.

While current CBMR research only provides the functionality for searching for the surface of music by executing the exact matching or the fuzzy matching for given music notes, the proposed method aims to capture the needs to search for music not by music notes but by musical structure, namely “Are there examples where Bach used a V-IV harmonic progression, which should be rare? If yes, how many cases do we see in his works and how did he address this progression in his compositions?” or, “Can we see all the past examples of a II-V-I progression created by great composers?”, which have been common questions amongst musicologists, composers and professional musicians.