

Content-based Music Information Retrieval System with Automatic DJ Mixing

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We will demonstrate our content-based music information retrieval system with automatic DJ mixing, which proposes a new, entertaining way to listen to MIR results. Typical MIR systems present MIR results to the user in a list format, from which users select and play songs. In order to improve this dull user experience, our system not only conducts content-based MIR, but also automatically mixes the songs in the MIR results, such as human DJs do to entertain the audience.

Our system is mainly composed of three processes: automatic beat/tempo extraction, content-based MIR, and automatic DJ mixing/playing. By the beat/tempo extraction process, beat/tempo information is applied to all songs in the database. The content-based MIR process retrieves songs from the database by means of content-based similarity to the users' query. Finally, the DJ mixing/playing process, adjusts the beat position and tempo of the songs in the MIR result list, to generate smooth transition between songs. In this mixing process, we have implemented a unique tempo adjustment technique, which can calculate the *optimal tempo adjustment coefficient* to minimize acoustic signal distortion. Our method has proved to be robust to beat extraction errors that are caused by tempo octave relationships.

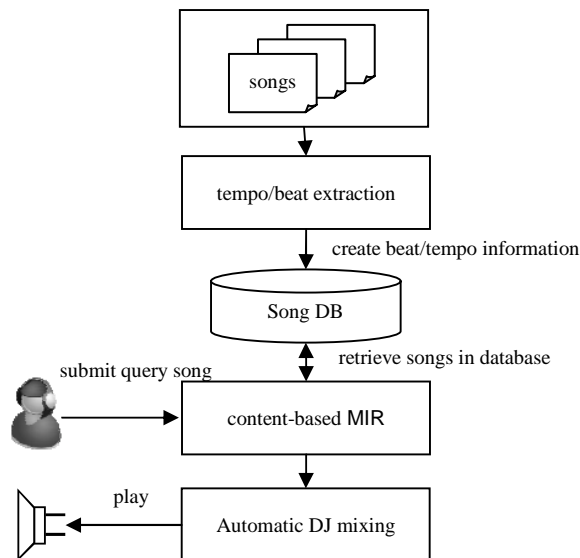


Figure 1: Conceptual image of system structure