Query-based Music Recommendations via Preference Embedding

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ABSTRACT

A common scenario considered in recommender systems is to predict users' preferences to unseen items based on their tastes on some observed items. One major concern with this situation is that users can only passively receive the recommendations generated by a system, and cannot actively alter or adjust the recommended results according to their different interests. In order to bridge the gap, this paper proposes an idea of "query-based recommendation" that attempts to incorporate the concept of information retrieval into the recommendation scenario. In the proposed query-based recommender systems, users are able to explore new recommended items by specifying their interests, and the systems will refer to the interests as a query to produce the corresponding recommendations. In specific, this work takes music listening as an application scenario for the query-based recommendation, in which a song track, an album, or an artist can be a query for driving the recommendation operations. In order to include such large heterogeneous information into a recommendation model, we present a novel technique called "preference embedding" to encode user preference and query intention into low-dimensional vector spaces. Then, with simple search methods or similarity calculations, we can use the encoded representation of queries to generate recommendations. In our experiments, three music listening datasets are used to evaluate the performance, including one from a real-world music online streaming service. The experimental results show that, with the idea of query-based recommendation, the proposed approach is effective to produce high-quality recommendations. In addition to the improvement, the proposed preference embedding can further enable us to incorporate more information into the model for the task of query-based recommendation.

Keywords

Recommendation Systems, Query-based Recommendation, Preference Embedding

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