

A Hybrid Multi-Criteria Hotel Recommender System Using Explicit and Implicit Feedbacks

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Abstract : Recommender systems, also known as recommender engines, have become an important research area and are now being applied in various fields. In addition, the techniques behind the recommender systems have been improved over the time. In general, such systems help users to find their required products or services (e.g. books, music) through analyzing and aggregating other users' activities and behavior, mainly in form of reviews, and making the best recommendations. The recommendations can facilitate user's decision making process. Despite the wide literature on the topic, using multiple data sources of different types as the input has not been widely studied. Recommender systems can benefit from the high availability of digital data to collect the input data of different types which implicitly or explicitly help the system to improve its accuracy. Moreover, most of the existing research in this area is based on single rating measures in which a single rating is used to link users to items. This paper proposes a highly accurate hotel recommender system, implemented in various layers. Using multi-aspect rating system and benefitting from large-scale data of different types, the recommender system suggests hotels that are personalized and tailored for the given user. The system employs natural language processing and topic modelling techniques to assess the sentiment of the users' reviews and extract implicit features. The entire recommender engine contains multiple sub-systems, namely users clustering, matrix factorization module, and hybrid recommender system. Each sub-system contributes to the final composite set of recommendations through covering a specific aspect of the problem. The accuracy of the proposed recommender system has been tested intensively where the results confirm the high performance of the system.

Keywords : tourism, hotel recommender system, hybrid, implicit features

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