

Applying reranking strategies to route recommendation using sequence-aware evaluation

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Abstract-

Venue recommendation approaches have become particularly useful nowadays due to the increasing number of users registered in location-based social networks (LBSNs), applications where it is possible to share the venues someone has visited and establish connections with other users in the system. Besides, the venue recommendation problem has certain characteristics that differ from traditional recommendation, and it can also benefit from other contextual aspects to not only recommend independent venues, but complete routes or venue sequences of related locations. Hence, in this paper, we investigate the problem of route recommendation under the perspective of generating a sequence of meaningful locations for the users, by analyzing both their personal interests and the intrinsic relationships between the venues. We divide this problem into three stages, proposing general solutions to each case: First, we state a general methodology to derive user routes from LBSNs datasets that can be applied in as many scenarios as possible; second, we define a reranking framework that generate sequences of items from recommendation lists using different techniques; and third, we propose an evaluation metric that captures both accuracy and sequentiality at the same time. We report our experiments on several LBSNs datasets and by means of different recommendation quality metrics and algorithms. As a result, we have found that classical recommender systems are comparable to specifically tailored algorithms for this task, although exploiting the temporal dimension, in general, helps on improving the performance of these techniques; additionally, the proposed reranking strategies show promising results in terms of finding a trade-off between relevance, sequentiality, and distance, essential dimensions in both venue and route recommendation tasks.

Index Terms-

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