Towards the Next Generation of Multi-Criteria Recommender Systems

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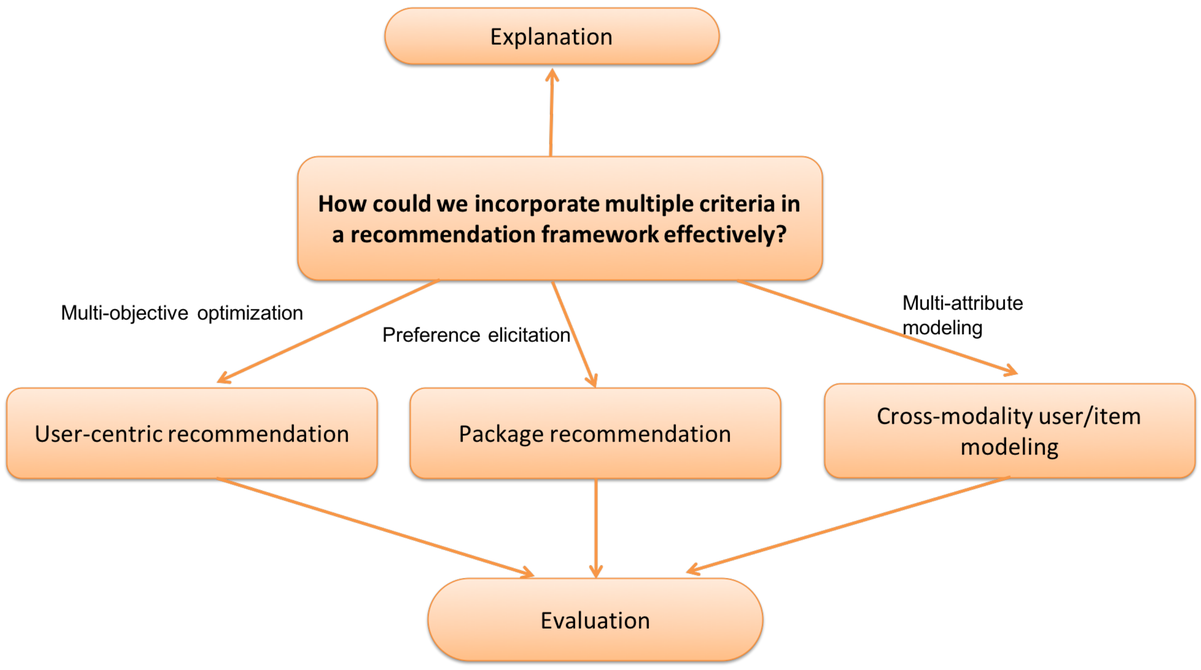
Research Questions



Current Work

Motivation: An assumption underlying offline evaluation is that recommenders with higher performance scores will be more satisfying to users. However, whether a user finds a particular recommendation satisfying or not, is independent of how we measure the performance of that recommendation.

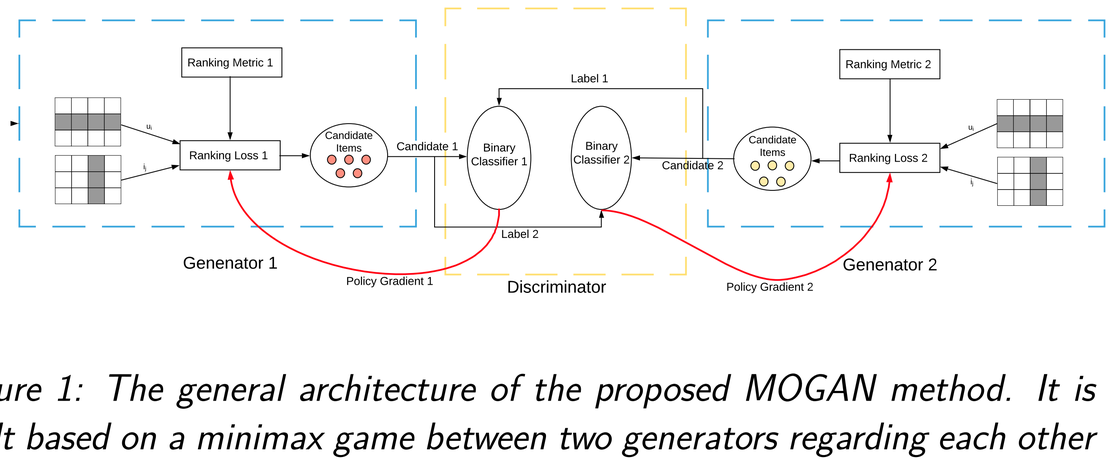


Figure 1: The general architecture of the proposed MOGAN method. It is built based on a minimax game between two generators regarding each other as the target. These generators are optimized by different list-wise ranking metrics. The discriminator tries to distinguish the recommendation lists generated from these two generators.

Table 1: The Statistics of the Datasets

Dataset	*Amazon Music*	*Movielens-100K*	*Yelp*
#users	5,541	943	366,715
#items	3,568	1,682	60,785
#ratings	64,706	100,000	1,569,264
Scale	1-5	1-5	1-5
Sparsity/%	99.67	93.70	99.99

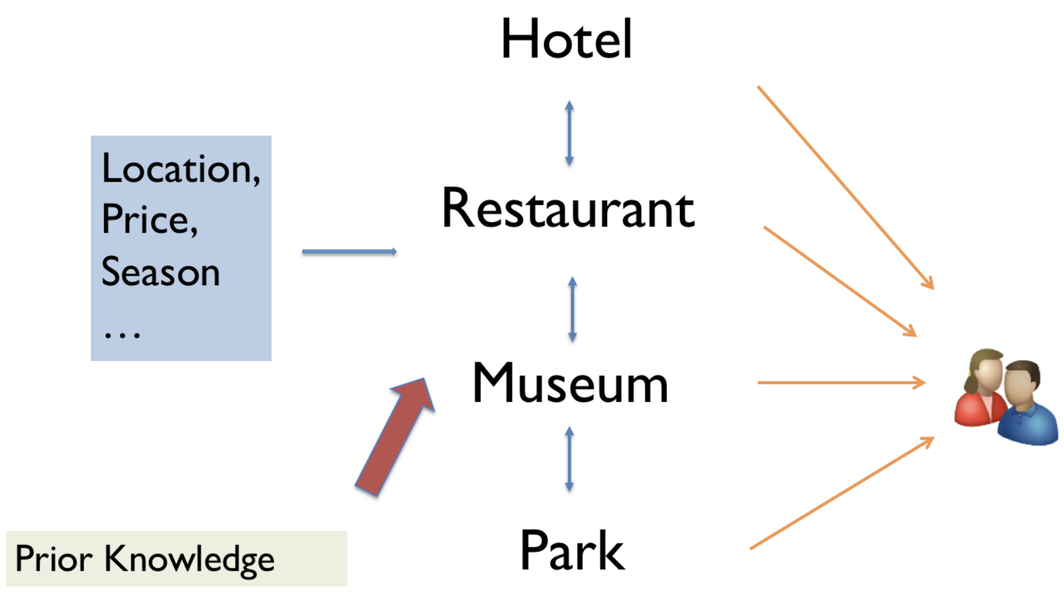
Experimental Design:

Game 1: DCG vs. AP
Game 2: Different gain functions in DCG
Game 3: Different discount functions in DCG
Game 4: Other ranking metrics

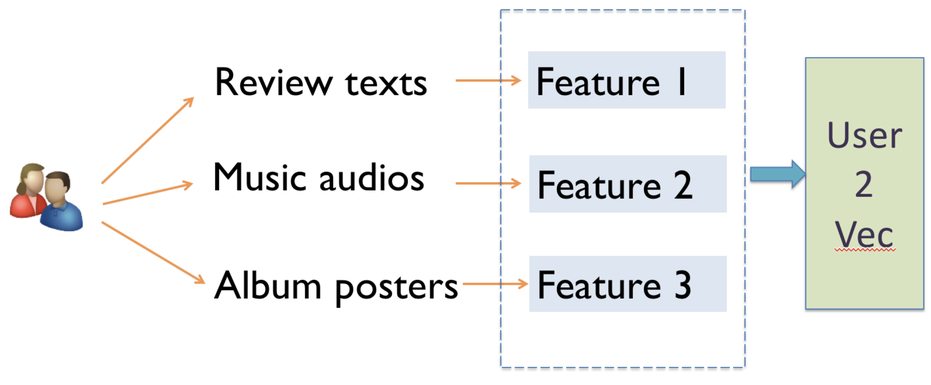
Future Work

Inspired by our current MOGAN model, the similar thought can be used in other scenarios in multi-criteria recommender systems.

1. Package Recommendation (e.g. A trip package)



2. Cross-Modality User/Item Modeling (e.g. Music Recommendation)



Extension: Group end-to-end user modeling

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