EDITORIAL

Special issue on recommender system

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1 Introduction

Intelligent recommendation is to deliver personalized services and items to users. Recommender systems are utilized in various areas such as movies, music, news, posts, POIs, and products. With the rapid development of social media and intelligent sensing techniques, we can now gather huge amount of user-contributed data, which can be leveraged to better predict personality traits and draw user profiles. However, the cross-space, multi-modal, and data sparsity nature also raises numerous challenges for recommendation. In recent years, the surging of deep learning techniques provides new opportunities for dealing with such issues. Numerous new models, such as neural collaborative filtering, Wide and Deep, DeepFM, xDeepFM, are thus raised. Several new directions such as explainable recommendation, recommendation with knowledge graph are also being investigated. This theme issue aims to provide an opportunity for researchers and product developers to review and discuss the state-of-the-art and trends of recommendation techniques and applications.

2 In this issue

The articles in this issue highlight relevant current technologies and approaches pertaining to recommender systems, including theoretical studies, practical issues, emerging technologies and innovative applications. Over the numerous submissions, we have finally accepted five high quality papers. The selected papers fall into two main research topics of recommender systems: three are about recommendation systems in particular areas (news, ride-sharing, and job), and two about general recommendation algorithms.

The first article, "An efficient ride-sharing recommendation for maximizing acceptance on geo-social data" by Tang et al. describes a novel approach that uses heterogeneous information network to maximize people's acceptance for ridesharing. The observed geographic proximity is usually treated as a clue for grouping riders, however, trust between unacquainted riders when sharing a trip is often overlooked. Tang leverages existing spatiotemporal trajectories organized as a meta-path to acquire a vast set of driver-rider pairs. With underlying trust links between riders in each pair, the rider's willingness for joining in a group is measured using social context, and subsequently, a ridesharing group is established by reaching the best compromise between user satisfactory and recommendation quality.

The second article, "NCR-KG: News Community Recommendation with Knowledge Graph" by Bai et al. describes a news recommendation framework that uses knowledge graph to represent each user's profile, including the personal information and tags that are extracted from historical clicked records. Users are clustered with a new similarity computation method, which generates users community. The news are recommended collaboratively with the records of all users in the community. As for the timeliness of news, an update method is proposed for the latest incoming news. The experiments are conducted with metrics evaluation and

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manual evaluation, and the results demonstrate the effectiveness and efficiency of the proposed framework.

The third article "Job Recommendation Algorithm for Graduates Based on Personalized Preference" by Zhou et al. describes a job recommendation algorithm for graduates considering their characteristics and personalized preference for jobs. Collaborative filtering method is currently the most frequently adopted and effective recommendation algorithm, but it cannot be directly applied to job recommendation for graduates because they generally have no historical records on employment. To solve this problem, massive campus records are used for user clustering and user modeling. The job recommendation algorithm takes account of both the group records of job choices and the individual preferences for jobs.

The fourth article, "Learning from Visual Content and Style: An Image-enhanced Recommendation Model" by Luo et al. proposes a deep learning method for recommending images that suit users' interests. Based on the state-of-the-art Visual Bayesian Personalized Ranking (VBPR) model for visual recommendation, the authors study the problem of learning both the visual content and style for image recommendation. They leverage advanced methods in computer vision to learn the visual content and style representation, and study how to combine visual signals with users' collaborative data. Experimental results show the effectiveness of the proposed model compared to existing methods.

The fifth article, "Helpfulness-aware Review based Neural Recommendation" by Ge et al. presents a neural network based recommendation method with the support of helpful reviews, which contain rich information of user interests and item characteristics. Different from existing review-based recommendation methods that only utilize the content of reviews while ignoring the helpfulness scores, the paper incorporates both of them in recommendation. The approach consists of a review encoder and a user/item encoder. Since many reviews do not have helpfulness scores, they propose a neural helpfulness prediction model to predict the helpfulness scores of these reviews. Experiment results indicate that the proposed approach outperforms other review-based recommendation methods.

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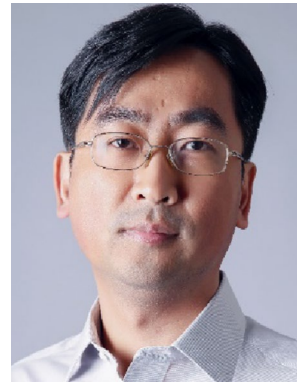
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