

DEPARTMENT OF COMPUTER SCIENCE

PhD Degree Oral Presentation

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| PhD Candidate: | Ms Wen WU |
| Date | 10 August 2018 (Friday) |
| Time: | 2:30 pm - 4:30 pm (35 mins presentation and 15 mins Q & A) |
| Venue: | FSC703, Fong Shu Chuen Library, HSH Campus |

“Augmenting Personalized Recommender Systems based on User Personality”

Abstract

Recommender systems (RS) have become increasingly popular in many web applications for eliminating online information overload and making personalized suggestions to users. In recent years, user personality has been recognized as valuable info to build more personalized recommender systems. However, the focus of the existing personality-based recommender systems has mainly on revealing the impact of personality on the user's preference over a single item or an attribute, which may ignore the impact of personality on users' perceptions of recommender systems when multiple recommendations are returned at the same time. In addition, they have mostly relied on personality quiz to explicitly acquire users' personality, which unavoidably demands user efforts. From users' perspective, they may be unwilling to answer the quiz for the sake of saving efforts or protecting their privacy. The application of existing personality-based recommender systems will thus be limited in real life.

In this thesis, we aim at 1) incorporating personality into top-N ($N > 1$) recommendations, with emphases on personalizing recommendation diversity, 2) deriving users' personality from their implicit behavior for augmenting the existing recommender systems.

Specifically, we develop a generalized, dynamic diversity adjusting approach based on user personality with the goal of achieving personalized diversity tailored to individual users' intrinsic needs. In particular, personality is integrated into a greedy re-ranking process, by which we select the item that can best balance accuracy and personalized diversity at each step, and then produce the final recommendation list. In this approach, personality is both used to estimate each user's diversity preference and to alleviate the cold-start problem of collaborative filtering recommendations. The experimental results demonstrate that our personalized diversity-oriented approach significantly outperforms related methods (including both non-diversity-oriented and diversity-oriented methods) in terms of metrics measuring recommendation accuracy and personalized diversity degree, especially in the cold-start setting.

Although personality has been proven effective at enhancing the multiple recommendations, the issue of how to obtain users' personality is still not well solved. We hence propose a generalized method to derive users' personality from their implicit behavior and further improve the existing recommender systems. A preliminary experiment has been conducted in movie domain. More specifically, we first identify a set of behavioral features through experimental validation, and develop inference model based on Gaussian Process to unify these features for determining users' big-five personality traits. We then test the model in a collaborative filtering based recommending framework on two real-life movie datasets, which demonstrates that our implicit personality based recommending algorithm significantly outperforms related methods in terms of both rating prediction and ranking accuracy. The experimental results point out an effective solution to boost the applicability of personality-based recommender systems in online environment.

***** ALL INTERESTED ARE WELCOME *****