THESIS INFORMATION

Title:	New methods for academic recommender systems based on social network analysis approach.
Major:	Computer Science
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Abstract:

The size of scientific database has been rapidly increasing. This makes it challenging researchers in searching useful information related to their research interest. It is not easy for young researchers who have less knowledge in their research domain to identify exactly useful information. For experience researchers, they have to deal with issue of overloading information in academic domain. Therefore, academic recommender systems is one of solutions as well as research directions that have been attracting a lot of attentions in recent years. Academic recommender systems will automatically provide related useful information for researchers.

Traditional approaches of recommendation basically are divided into categories: (1) demographic filtering; (2) content-based filtering; (3) collaborative filtering. Demographic Filtering is based on principle that individuals with certain common personal attributes (sex, ages, country, etc) will also have common preferences. Content-based filtering uses actual content features of items, while the collaborative filtering predict new user's preference using other users' rating, assuming the like-minded people tend to have similar choices. Traditional methods have been dealt with some issues, challenges in this field such as: big data; no benchmark for experimental comparision in the field of academic; low accuracy of prediction; cold-start problem; spare-data in rating matrix, methods for evaluating quality of recommended list. Recently, since the generation of web 2.0, this field have been attracted a lot of studies which focus on exploiting social relations to make recommendation (social recommendation).

In fact, researchers, especially young researchers, usually need and require advices from their colleagues, senior researchers whom they have close relationships with. However, traditional

approaches have a gap that did not take social relationships into consideration to make recommendation. Therefore, the key objective of this study is to exploit explicit as well as implicit academic relationships recognized from the collection of publications combining with trend factor and some other information such as active degree, impact factor of researchers to improve performance of state-of-the-art recommendation methods in academic area.

The main contributions of the dissertation are as follows:

(1) Proposing ASN model (Academic Social Networks) used to model implicit, explicit relationships in academic domain detected from the collection of publications.

(2) Collaborator Recommendation

- For un-isolated researcher (who have at least one coauthor-ship in ASN): proposing trend-based vertex similarity methods in ASN model to recommend prospective collaborators.

- For isolated researcher (who have no any coauthor-ships in ASN yet): proposing set of new features to recommend prospective collaborators for isolated researchers.

- Proposing new methods to evaluate quality of recommended collaborations.

(3) Scientific Publication Recommendation: exploiting citation network, different types of trust relation in ASN model to propose new methods for recommending scientific publications.

(4) Enriching a scientific database that has more than 6 millions publications and academic searching systems named CSPubGuru hosting at (www.cspubguru.com).

The results of research and experiments are published in journals and international conferences are indexed by reputable publishers such as DBLP, IEEE, ACM Digital Library, etc.

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