Finding Experts on Facebook Communities: Who Knows More?

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ABSTRACT

Online communities have become important places for users to share information. In this context, the work described in this article aims to analyze computational methods that could allow us to identify users with the highest expertise levels on a specific knowledge domain in an online community. In this study the authors extracted data from a Java discussion group from an online community - Facebook, captured some important information and represented the community as a graph. Then, the authors compared the Bow-tie structure of this community with the ones from the Web and from a forum that are described in the literature. In addition, the authors tested some graph metrics and algorithms in order to analyze if they could provide a method to find the experts in this online community. The results show that four of the tested metrics can indicate if a user is an expert or not.

Keywords: Bow-tie Structure, Experts, Facebook, Graph Metrics, Recommendation Systems, Social Networks

INTRODUCTION

Nowadays, online social networks through the use of Web platforms are part of the routine of a significant portion of the world population. People stay many hours a day connected to the internet, interacting through conventional computers or mobile devices. The use of online social networks environments and blogs represent the fourth most frequently activity performed on the Web, reaching 66.8% of the world population (Nielsen, 2009). These online environments promote knowledge exchange, dialogue, responsive participation, authorship

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and collaboration, thriving several knowledge areas and businesses, such as Education and E-Commerce.

One of the major recent concerns is to investigate ways to extract information from the Web, in order to generate new knowledge, which could enable a greater understanding of the users and their interactions, and support some kind of decision in the real world.

The work described in this article aims to investigate the use of structures and algorithms for identifying the users with the highest levels of competence to answer questions posted in a community used for online education. Online communities, such as the one that this work explores, are generally intended for sharing information and knowledge. Their members usually do not know each other, can be identified by pseudonyms and are willing to help each other for several reasons, such as altruism, reputation, expected reciprocity and direct benefits of learning.

Since search engines do not necessarily reflect what is requested at a given time (Prates et al., 2013), social query (Souza et al., 2013) can be an alternative as it is the process of posting questions in an online community and waiting for answers. Sometimes a person has a doubt, but no idea on how to solve it. It may be difficult for this person to make a search on the Web because he may not even know the keywords that he should provide to the search engine. Making questions in online communities can be a good alternative since the answers can give some directions to the person who asks or he can ask for more information or provide more guidance to allow a better answer.

Huberman et al. (2009) argue that online communities with many users, like Twitter and Facebook, are good places to find information using social query. According to Horowitz et al. (2010), some problems are better solved by people, for example, high contextualized questions, recommendations request, opinions request, advices request, and social connection request. Morris et al. (2013) present statistics confirming that sharing questions is a viable method to obtain answers online as they show in their case study that 93.5% of users had their questions answered. It is also worth to notice that in 90.1% of the cases responses were provided within one day.

However, the use of social query also has some limitations. When a question is posted on a community, the person who asks may have some disappointed outcomes (Morris et al., 2013) (Paul et al., 2013), such as: getting wrong or contradictory answers; keeping getting responses even after the problem has been solved; and never getting an answer, since some communities tend to prioritize the viewing of the most recent posts. One way to minimize some limitations of social query (wrong answers and no answers) is to find the most appropriate people to answer a question (experts). In this way, an online community may ensure that a given question could be directed to experts, requesting their support in providing an answer. Therefore, using this approach, the chances of receiving a good answer may increase.

An example scenario is a computer science student who wants to start a development project using Java technology. However, for this student, Java development is something new and, naturally, he may face problems when trying to compile his first application. Instead of searching on the Web using a search engine, this student decides to seek help in a specific online community. Then, he may post a question and wait for an answer. Hopefully, an expert provides the desired answer.
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