Chapter VII
From PageRank to Social Rank: 
Authority–Based Retrieval in 
Social Information Spaces

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**ABSTRACT**

Social information spaces are characterized by the presence of a social network between participants. In this chapter we present methods for utilizing social networks for information retrieval by applying graph authority measures to the social network. We show how to integrate authority measures in an information retrieval algorithm. In order to determine the suitability of the described algorithms, we examine the structure and statistical properties of social networks, and present examples of social networks as well as evaluation results.

**INTRODUCTION**

While the core concepts of information retrieval have been traced back as far as 4,000 years by some authors (Manber, 1992), the field itself is comparatively recent. The development of automated information retrieval systems has always been closely tied to available computing power. As increasing amounts of data and processing power become available, new methods are be-
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Social Networks, Social Information Spaces, and Social Information Retrieval

Social networks become increasingly interesting with the shift of computer systems away from devices for computation towards communication media. Although social networks exist without any computer support, in recent years many different networks were formed, using the Internet as their main platform.

Besides a shared interest, the formation of social networks in real life is often determined by external factors—age, sex, geography, or a crucial experience (e.g., relocation or war.) Since virtual networks or communities are unconstrained by such external factors, the shared interest becomes a predominant determinant. The participants’ identification with the group and the group’s self-made norms also play an important role (see Dholakia, Bagozzi, & Klein Pearo, 2004).

The earliest applications of computer networks were electronic mail, mailing lists, and discussion boards. Especially in recent years, the World Wide Web shifted from content provision towards an interactive information space. Content (information) is not only provided by the providers of Web sites. Technologies like Wikis (Fuchs-Kittowski & Köhler, 2005), blogs (e.g., BlogSpot), or community support systems provide mechanisms that allow every user to add or change the content of this information space, with respect to access rights and correct authorization. We collectively refer to those interaction-enabling technologies as “Web 2.0” or the “social Web.”

Technology serves as a new basis for a much older concept: social networks. People who share the same interests form a group. They know people within the group and share information with each other.

The glue that keeps them together is trustworthiness. Information given by a known person is trusted more than the one given by unknown people. In particular, those feelings of trust can be