Chapter 18
The Effectiveness of Big Data in Social Networks

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ABSTRACT

In this chapter, we will discuss how “big data” is effective in “Social Networks” which will bring huge opportunities but difficulties though challenges yet ahead to the communities. Firstly, Social Media is a strategy for broadcasting, while Social Networking is a tool and a utility for connecting with others. For this perspective, we will introduce the characteristic and fundamental models of social networks and discuss the existing security & privacy for the user awareness of social networks in part I. Secondly, the technological built web based internet application of social media with Web2.0 application have transformed users to allow creation and exchange of user-generated content which play a role in big data of unstructured contents as well as structured contents. Subsequently, we will introduce the characteristic and landscaping of the big data in part II. Finally, we will discuss the algorithms for marketing and social media mining which play a role how big data fit into the social media data.

PART I: SOCIAL NETWORKS ANALYSIS

Social Networks

Social Networks is a social structure which involves different subjects of any interested topics internationally whereby at least a group of two people interactively exchange. It is in an open space where it gives to post like a common forum for representatives of anthropology, sociology, history, social psychology, political science, human geography, biology, economics, communications science and other disciplines who are share with an interest in the study of the empirical structure of social relations and associations that may be expressed in network form.

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The behind abstract concept was based on discrete mathematics using graph theory to construct the pairwise structure relation model between them comprising nodes which is starting point in social networks. Most social network services are web-based internet applications and provide users to interact over the Internet with exchanging interested information, such as including e-mail and instant messaging, chatting, mobile connectivity, photo & video sharing and blogging. Social networks allow to users to post unstructured social contents to share ideas, pictures, posts, activities, events, and interests with people in their network. In this session, we will discuss the issues of characteristic, model, security & privacy, demographic and analysis on social networks.

1.1 Characterization

Online social networks are based on users while web pages are based on contents. Users of social networking sites form a social network, which provides a powerful means of sharing, organizing, and finding content and contacts. The researchers found three main points (Mislove, Marcon, Gummadi, Druschel, & Bhattacharjee, 2007) – 1) the degree of distributions in social networks follow a power-law and the coefficients for both in-degree and out-degree are similar so that nodes with high in-degree also tend to have high out-degree. 2) Social networks appear to be composed of a large number of highly connected clusters consisting of relatively low degree nodes so that the clustering coefficient is inversely proportional to node degree. 3) The networks each contain a large, densely connected core. As a result, path lengths are short, but almost all shortest paths of sufficient length traverse the highly connected core.

Based on the research, we conclude that the “nodes” or the relation between members of the network are those users who established the number of “friends” within the online network, establishing themselves as many as friendship and as close to the “core” of that social network as possible. This means that the closer to the core of a social network that you are, the faster you’re able to propagate information out to a wider segment of the network. This is exactly the kind of opportunity that most marketers look for. Furthermore, we will discuss the some core characteristics of social networks:

1. **Interactive User Based**: Unlike the websites which based on content that was updated by one user and read by Internet visitors, social networks like Facebook, Twitter, LinkedIn etc. are so interactive timely. User can create the account themselves, populate the network with conversations and content and fill with network-based online gaming application. Moreover, social media services have openness for feedback and participation. They encourage voting, comments and the sharing of information. This is what make social networks so much more exciting and dynamic for Internet users.

2. **Community**: Social media allows communities to form quickly and communicate effectively. Communities share common interests, beliefs or hobbies such as a love of photography, a political issue. Social Media allow not only to discover new friends within these within these interest based communities, but you can also reconnect with old friends that you lost contact with many years ago.

3. **Emotion**: The social networks provide not only the information but also allow the users with emotional sense that no matter what happens, can easily reach to their friends so that friends can instantly communicate over any of crises or issue and give support or suggestion on the current situation. Beyond the characteristics, Social Networks can generate social influence among the