EXTENDED ABSTRACT

Jisun An, Computer Laboratory, University of Cambridge

Recently online social networking sites like Facebook and Twitter have emerged as a popular way of discovering information on the World Wide Web. In contrast to traditional methods of content discovery, such as browsing or searching, content sharing in social networking sites occurs through word-of-mouth, i.e., content spreads by the way of conversations between users. For instance, users share links (URLs) to content on the Web with remarks like "Have you seen this article?" or "Check out this YouTube video." This new way of discovering information has rapidly gained popularity and today social networking sites are known to be a major driver of traffic to many web sites. Recent data from the Twitter network shows that nearly 23 million web links are shared every day.

To better understand this newly popular phenomenon, in this paper, we present a detailed analysis of word-of-mouth exchange of URLs between Twitter users. With over several tens of millions of tweets per day and over a quarter of them containing URLs, Twitter provides a particularly rich data set to study word-of-mouth based URL discovery. Our analysis investigates and characterizes several aspects of word-of-mouth based content discovery including its impact on URL popularity and its effect on the diversity of information discovered by users.

In order to study how the 54 million users in Twitter collaboratively discovered and spread web links, we built an information propagation tree for every URL that was shared during a random week in 2009. We used Krackhardt's hierarchical tree model to construct the paths of information flow.

Based on the propagation trees of URLs, we answer a number of questions that are fundamental to understanding word-of-mouth based web discovery. The questions we ask include: Can word-of-mouth reach a wide audience? What kinds content are popular in social media as opposed to the web in general? Does word-of-mouth give all content, including those published by unpopular domains, a chance to spread? What are the typical structures of word-of-mouth propagation trees? We discuss the implications of our findings for the design of word-of-mouth based marketing strategies and the role of social media.