Moving Towards the Effect of Spiral of Silence Detection Based on Social Network Analysis and Opinion Mining Techniques

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Extended Abstract

In recent years, social networking websites have already become the most popular World Wide Web application. Some social networking websites also play a critical role that affects social opinion and movement. Social networking websites are now therefore the most important platform for us to study related issues, such as politics, communication, marketing, etc. as well as an essential platform for those who wants to distribute policies or political idea (Version & Auvinen, 2013).

Under this background, data from social networking websites are very valuable. If we can analyse and use these data well, it will be helpful for us to understand the opinions, comments and behaviours of online users. Many experts in the area of information technology have devoted themselves to related techniques in order to discover users' opinion or comments more efficiently and accurately. The techniques include: web mining, text mining, social networks analysis, sentimental analysis and opinion mining (Agrawal et al., 2003).

However, in related researches, a very important theory in the area of communication study has been ignored, which is called "The spiral of silence". When spiral of silence happens, users will hide their opinions or comments when they understand the opinions or comments are non-mainstream (Matthes, Morrison, & Schemer, 2010). From literatures, researchers believe the effect of spiral of silence also happens in social networking website, which may affect the accuracy to detect users' opinions or comments (McCurdy, 2010). Thus, it will be very interesting and helpful, if a methodology that can be applied to detect the effect of spiral of silence automatically from data in social networking website based on the definition of the theory.

According to the background and motivation of this paper, we propose an approach based on social networks analysis, sentiment analysis and the classification technique of data mining. First of all, the data from 200 different posts on Facebook fans page will be collected and classified into two different groups (100 posts for each group) and marked with "spiral of silence" and "non-spiral of silence" respectively. Then, we will perform social networks analysis to generate measurements of social network analysis, including "Degree", "Closeness", "Diameter", "Betweenness" and "Clustering Coefficient". In addition, the keywords of the posts will be extracted as an additional parameter. The collected parameters will then be used for performing the classification in order to discover important parameters, which are useful for detecting the effect of spiral of silence.

In the experiment and evaluation of this research, we collected 1000 posts that have not been classified and the effect of spiral of silence has not been detected. The posts are all related to midterm elections in Taiwan in 2014. Finally, the experiment results show that the effect of spiral of silence does exist in online social networking websites, such as Facebook. Furthermore, the results also prove the proposed approach is useful in which around 86% of the effect of spiral of silence can be detected correctly.

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