Modeling Opinion Influence in Social Media Networks for Business Intelligence Applications (PI: Dr Li Wenjie Maggie; 2012/13)

The explosive growth of social media has provided millions of people the opportunity to share their opinions about a multitude of topics, such as politics, sports and especially commercial products of companies. The relationships and interactions among people play a fundamental role for the spread of opinions through their social networks. Monitoring online public opinions and analyzing positive or negative sentiment of opinions can be extremely useful for various business intelligence applications, notably viral marketing and customer relationship management. In recent years, opinion mining and sentiment analysis on social networks have attracted increasing attention from many researchers. The prior work of ours and others undoubtedly provided valuable market information for both consumers and companies, but they were mainly concerned with the content of information and thus are not able to answer the questions related to people's behavior and social interactions, like how people's opinions are formed and change, and how people influence each other to propagate opinions through the networks. In this project, we study opinion influence, which is equally important as analysis of opinion sentiment. It helps to identify opinion influencers who are often the targets of companies for advertising and feedback communication. To our knowledge, there is no adequate research to address this need. The main objective of this project is to develop a framework which includes models and techniques for mining opinion influence of individuals on others. To this end, we have identified several critical issues that are relatively under-researched in the past, including: (1) how to effectively define measurable influence so that the influence can directly link to opinion formation, opinion

change and opinion propagation; (2) how to model and estimate the influence of one person on another from exiting people's behaviors based on both the sentiment of the content of opinions they express and their social connections and interactions; and (3) how to formulate the relationship between the individual influence and the collective influence of a group of individuals on someone else. We will develop various probability models for the estimation and prediction of opinion influence on the basis of in-depth analysis of the characteristics of social media networks. The deliverables of this project include new concepts and innovative solutions to challenging issues in opinion influence modeling and computing on social networks. They will contribute to advance the research in opinion mining and add value to practical applications of business intelligence.