

Chapter 9

Data Mining for Social Network Analysis Using a CLIQUE Algorithm

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ABSTRACT

Many different areas of computer science have been developed for many years in the world. Data mining is one of the fields which many algorithms, methods, and models have been built and applied to many commercial applications and research successfully. Many social networks have been invested and developed in the strongest way for the recent years in the world because they have had many big benefits as follows: they have been used by lots of users in the world and they have been applied to many business fields successfully. Thus, a lot of different techniques for the social networks have been generated. Unsurprisingly, the social network analysis is crucial at the present time in the world. To support this process, in this book chapter we have presented many simple concepts about data mining and social networking. In addition, we have also displayed a novel model of the data mining for the social network analysis using a CLIQUE algorithm successfully.

INTRODUCTION

Technology science in the world has had many accomplishments for the recent years in the world. Many science fields have successfully been created. Artificial intelligence and data mining have already been developed more and more for many years. They have successfully been applied to many different fields in everyone's life. Lots of algorithms, methods and models of the data mining (DM) have already been built and developed fully, and they have been very helpful. They have also been applied to many commercial applications, surveys, successfully. Many economies of the countries in the world have had many

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breakthroughs certainly. Therefore, social networks have been generated fully and successfully for everyone's life. The social network (SN) has already had many sub-fields which have been very important for everyone's life, industry and economy. However, to get many positive benefits of the social network in the recent years in the world, it has also been many negative problems which have been solved for the years. People have spent lots of cost and time for these disadvantage problems to be solved fully and successfully for themselves in the world. Thus, social network analysis has been very crucial for developing the social networks in the world certainly. Semantic analysis has been a crucial sub-field of the SN. Many hard problems and challenges have been generated and grown from which a lot because there have been billions of sentences and documents in many different languages of billions of reviews, comments, and billions of users on billions of websites of the social networks. These sentences and documents should have been processed in more details or not. How the sentences and documents have been processed in more details.

Based on our opinion, the data mining is a process which patterns and relationships of these patterns have been discovered fully, certainly, and successfully in massive data sets to solve many complex problems through data analysis of these big data sets in more details. We can predict future trends according to the tools and algorithms of data mining.

The social network according to our opinion is a structure of society which has been made up of a set of social actors (individuals, organizations, users, etc.), sets of dyadic ties, and other social interactions between actors. Many sets of methods for analyzing the structure of whole social entities and a variety of theories have been provided for explaining the patterns observed in the structures certainly.

The social networking (SNG) based on our opinion is defined that connections between friends, family, classmates, customers, and clients are made by using of internet-based social media programs. It can happen for social purposes, business purposes or both through sites: Facebook, Twitter, LinkedIn, etc., it is also a significant target area for marketers seeking to engage users.

The social network analysis (SNA) according to our opinion has been used for the study of these above structures to identify local and global patterns, locate influential entities, and It has also been used for examining network dynamics.

We have known why these above problems and challenges have been crucial as follows:

1. The SNs have been many big advantages certainly.
2. They have been applied to many benefit areas successfully such as ecommerce and advertising
3. To maximize the positives of the social networks, lots of algorithms, methods, models and tools have been developed for a long time.
4. Billions of the sentences and documents of the reviews and comments of the users have certainly been a lot of potential benefits for many years.

In this chapter, we have presented a novel model of the DM for the SNA a CLIQUE algorithm (CLA). Especially, this novel model has been built for sentiment analysis (SA) which is a crucial sub-field of the SNA. The SNA (also known as opinion mining (OM) or emotion classification (EC)) uses natural language processing (NLP), text analysis (TA), computational linguistics (CL), etc., to identify, extract, quantify, study systematically affective states, and study subjective information. The SNA means that a sentence is identified semantics such as positive, negative, or neutral. If a valence of a sentence is less than 0, this sentence is identified as the positive polarity. If a valence of a sentence is greater than 0, this

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