Chapter 8

Data Mining Prospects in Mobile Social Networks

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ABSTRACT

Unable to accommodating new technologies, including social technology, mobile devices and computing are other potential problems, which are significant challenges to social-networking service. The very broad range of such social-networking challenges and problems are demanding advanced and dynamic tools. Therefore, in this chapter, we introduced and discussed data mining prospects to overcome the traditional social-networking challenges and problems, which led to optimization of MSNs application and performances. The proposed method infers defining and investigating social-networking problems using data mining techniques and algorithms based on the large-scale data. The approach is also exploring the possible potential of users and systems contexts, which leads to mine the personal contexts such as the users’ locations and situations from the mobile logs. In these sections, we discussed and introduced new ideas on social technologies, data mining techniques and algorithm’s prospects, social technology’s key functional and performances, which include social analysis, security and fraud detections by presenting a brief analysis, and modeling based descriptions. The approach also empirically discussed using the real survey data, which the result showed how data mining vitally significant to explore MSNs performance and its crosscutting impacts. Finally, this chapter provides fundamental insight to researchers and practitioners who need to know data mining prospects and techniques to analyze large, complex and frequently changing data. This chapter is also providing a state-of-the-art of data mining techniques and algorithm’s dynamic prospects.

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1. INTRODUCTION

These days, researches in Mobile Social Networks (MSN)s are at the forefront of innovation in data mining (Bonchi et al., 2011) and prevalent on the Internet, which becomes a hot research topic attracting many professionals from a variety of fields. The reason is that all entities (such as friends, devices, or systems) in this world are related to one another in one way or other. Thus, social network mining is a growing research field. It aims at bringing researchers together from different fields, which includes machine learning, artificial intelligence, optimization, graph theory, mobile computing and other fields with the goal of solving fundamental problems that the rise of social networks has brought into the scientific arena (Bonchi et al., 2011; Park & Cho, 2010). MSNs are a matured level of the traditional social networking, which is advancing to location-acquisition and mobile communication technologies empower people to use location data with existing online social networks. The dimension of location helps bridge the gap between the physical world and on-line social-networking services. As mobile devices are the most essential components of MSNs, which users are capable of access social service as their own locations, able to know who are there, and many other benefits. These also give a chance to collect record and store large data sets, which can be significant to further analysis of MSNs applications and performances.

The rapid growth of collected and stored MSNs data are an interacting research issue as challenges and opportunities or prospects of the social network applications, which is demanding powerful tools processing (Shen & Ma, 2008). The issue of mining large data set is exciting research topic in which enters the center stage of data exploration. Social network analytics involves the rapid analysis of user-generated system content (for example, blogs, tweets, microblogs, etc.), which the social businesses can enjoy dynamic social networking that could handle the implicit user feedbacks related to services or other social media resources, events, and society. The spread of information via social media challenges, users’ knowledge of network science and information distribution, and issue of new opportunities and its understanding is the growing challenges of social network’s applications and dynamisms (Shim et al., 2011). At the same time, mobile computing towards social networking is truly becoming pervasive in the everyday lives, which poses other additional challenges for research on social network’s access and computing, activity recognition and intention detection, and other problems (McLennan & Howell, 2010).

Currently, the demands of social networking and data generated from its services have exceeded the dimensions, which is invisible to perform thorough and accurate analysis with traditional data manipulation methods. Since, the conventional data analysis method is not networked to accommodate the newly developing social-networking applications. Therefore, in this chapter, we introduce data mining prospects and discussed its successful opportunity to overcome the challenges, which is also significant to optimize MSNs performance and applications (Ploderer et al., 2010). The data mining prospects refer to the ability to explore and learn from past trends, and current status concatenates to the future predictions. The approach is searching the possible options for the challenges based on extracted knowledge or data explorations with the involvements of mobile and computing technologies. It is an advanced machine learning tool to develop patterns from large data sets, which is essential to handle MSNs multi function. Thus, data mining prospects or applications in MSNs arise in several ways, including social groups’ speech processing, social interconnection’s machine translation, mobile technologies, and visual processing. Machine learning at MSNs raises deep scientific and engineering challenges (Domingos & Richardson, 2001).