Chapter 30

Opinion Mining and Information Retrieval: Techniques for E-Commerce

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ABSTRACT

E-commerce is an increasingly pervasive element of ambient intelligence. Ambient intelligence promotes the user-centered system where as per the feedback of user, the system changes itself to facilitate the transmission and marketing of goods and information to the appropriate e-commerce market. Ambient Intelligence ensures that the e-commerce activities generate good confidence level among the customers. The confidence occurs when the customers feel that the product can be relied upon to act in their best interest and knowledge. It affects the decision that whether a customer decides to buy the product or not.

With the rapid expansion in the field of E-Commerce, most of the people are buying products on the web and also writing reviews about their experiences with the products. Popular products are receiving large number of reviews every day. New customers who want to buy the product are now firstly looking to have an unbiased summary of product reputation in market based on opinions of existing customers. Opinion Mining is an exciting research area that is currently under rapid development. It uses techniques from well-established technologies like Natural Language Processing, Data Mining, Machine Learning and Information Retrieval. This quick growth of online information on web has attracted increasing interest in technologies for automatically mining personal opinions from Web documents. Such technologies would benefit e-commerce community for advertising and promotion to target their potential buyers.

The explosive increase in Internet usage has attracted technologies for automatically mining the user-generated contents (UGC) from Web documents. These UGC-rich resources have raised new opportunities and challenges to carry out the opinion extraction and mining tasks for opinion summaries. The

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technology of opinion extraction allows users to retrieve and analyze people’s opinions scattered over Web documents. Opinion mining is a process which is concerned with the opinions generated by the consumers about the product. Opinion Mining aims at understanding, extraction and classification of opinions scattered in unstructured text of online resources. The search engines performs well when one wants to know about any product before purchase, but the filtering and analysis of search results often complex and time-consuming. This generated the need of intelligent technologies which could process these unstructured online text documents through automatic classification, concept recognition, text summarization, etc. These tools are based on traditional natural language techniques, statistical analysis, and machine learning techniques. Automatic knowledge extraction over large text collections like Internet has been a challenging task due to many constraints such as needs of large annotated training data, requirement of extensive manual processing of data, and huge amount of domain-specific terms. Ambient Intelligence (AmI) in web-enabled technologies supports and promotes the intelligent e-commerce services to enable the provision of personalized, self-configurable, and intuitive applications for facilitating UGC knowledge for buying confidence. In this chapter, we will discuss various approaches of Opinion Mining which combines Ambient Intelligence, Natural Language Processing and Machine Learning methods based on textual and grammatical clues.

INTRODUCTION

Based on the convergence of ubiquitous computing, ubiquitous communication and intelligent user-friendly interfaces, Ambient Intelligence is future of E-commerce. Ubiquitous Computing deals with the integration of microchips into everyday objects while Ubiquitous Communication facilitates these objects to communicate with each other and intelligent user interfaces provides the control to the users to control and interact with the AmI environment effectively. The present global market scenario facilitates and promotes the e-commerce and e-business activities, making them a strong catalyst for economic development. The rapid and remarkable development in the field of information and communication technologies has increased the consumer participation and customization in almost every business. Users now actively write their experiences, choices, and recommendations on blogs, discussion boards or websites etc. Product reviews exist in various formats on the Internet. Like the websites dedicated to a specific type of product (such as TV or Fridge), sites for newspapers and magazines that may feature reviews (like Consumer Reports), and sites that collects professional or user reviews in specific domains (like codeguru.com in computers), or the broader domains (wikipedia.com and yahoo.com). The business community has welcomed this change in market and dealing with it perfectly by strategically positioning their products or services. The company determines the upcoming opportunities and work for them with appropriate strategies and policies while exploiting the latest technologies, which is encouraging the use e-commerce technologies in advertising, marketing and promotion. The Internet is used as a medium for enhanced customer satisfaction. The companies are providing more detailed information about the product or service to increase the trust and determination of potential buyers.

The recent developments in web technologies have increased the acceptability and reliability ratio of e-commerce. Customers are now relying more trustfully on the information of web which plays remarkable role in their decisions of purchase. Customers now tend to search the web