Chapter 39
Predictive Analysis of Emotions for Improving Customer Services

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ABSTRACT

Human emotions plays an important role in everyday communication. Emotions are formed by the combination of cues such as relative actions, facial expressions, and gestures and reactions. Emotions are also present in written texts like in social media, chats, customer reviews. By getting inspired by works done in the domain of sentiment analysis, this chapter explores advances to automatic detection of emotions in text which help in Improving Customer Services. This chapter presents a framework for automatic detection of emotions in customer reviews based on different emotions theories in the fields of psychology and linguistics. This framework uses advanced Machine Learning (ML) techniques with Natural Language Processing (NLP) methods for better understanding of emotion detection and recognition in customer reviews. The text under study comprises data collected from leading Indian e-commerce portals like Flipkart, Snapdeal and Amazon, which contains text rich in emotions. The advantages and application based emotion detection framework has been incorporated with suitable examples.

INTRODUCTION

Language is the most important tool for communication and help to convey information in a society. Language provides suitable means to express emotions in several forms. Natural Language Processing techniques are used to identify meaningful inferences content in text. Multiple applications related to information retrievals such as topic-based modeling, text categorization, question-answering systems, has been focused on the information contained in the data (Jain & Kumar, 2015).

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During the last few decades around the world, the growth of the internet has increased the communication levels and internet users widely used multiple platforms to post their opinions online. In current scenario, people increasingly use micro-blogging platforms and social networking sites, to share and retrieve relevant information in real-time which contains opinions and sentiments (Chesley et al.,2006). Intelligent computational tools have been used to extract meaningful inferences and help companies to utilize this information for their productivity.

The e-shopping websites provides the feature where a customer can give feedback in the form of review to the product he purchased. There are massive amount of reviews available for every product in multiple e-commerce portals. A simple example related to customer review related to smart phone has been presented in Figure 1. Most of the users view the rating given to the product and read some of the reviews before decision making. The ratings are not enough to decide whether a product is feasible to buy or not. Therefore getting a conclusion from reviews is manually a tough task.

Much of the current work for analysis of customer reviews has been focused on polarity orientation of textual data. Limited work has been done in the direction of type of emotions present in written text by the customers. Recognizing emotions that has been expressed by customer reviews could provide the general intention of customer towards products and services. This chapter presented an emotion detection based system to provide benefit to the customer in decision making before the purchase of product or services. The Emotions categories in customer reviews definitely help companies to enhance their marketing strategy in a better way. .

The methods related to automatic emotion detection can be useful in many real-time applications with the help of human psychological techniques (Dung and Cao,2012). In recent years, the growth of e-commerce has brought a boom in the business market. The concept of online shopping has become one of the biggest successful businesses. With the availability of products on the websites, the interest of public has grown towards online shopping. Whenever any user is interested in purchasing a product online, the user completely depends on the reviews that have been given for a particular product. This review can be oral or written. On internet most of the emphasis is given on written review that a product receives, and this helps the user to make a decision whether to buy a product or not. So, it is necessary to build a system that finds out the emotions present every review by users so that they can but the product It also helps the company owners to determine whether the product they launched in the market is been accepted by users or not. In concern of social media or the customer reviews data it has more complications due different geographical location. A wide variety of work has been carried out in the field of sentiment analysis and opinion mining but limited work has been carried out in the field emotion detection and recognition. This chapter presents a framework for automatic detection of emotions in customer reviews using different emotions theories in the fields of linguistics and psychology. This framework uses Machine Learning methods and Natural Language Processing (NLP) and for better understanding of emotions present in customer reviews. A simple example of customer reviews which contains emotion bearing words has been presented in Figure 1.

BACKGROUND

Emotional states have multiple cognitive bases which are formed by number of factors. The scope of this chapter is limited to provide important features relevant to recognize emotion and the process of determining the emotional orientation of customer reviews. Emotion present in multiple languages or