Chapter 7
Integrating Semantic Acquaintance for Sentiment Analysis

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ABSTRACT

The use of emerging digital information has become significant and exponential, as well as the boom of social media (forms, blogs, and social networks). Sentiment analysis concerns the statistical analysis of the views expressed in written texts. In appropriate evaluations of the emotional context, semantics plays an important role. The analysis is generally done from two viewpoints: how semantics are coded in sentimental instruments, such as lexicon, corporate, and ontological, and how automated systems determine feelings on social data. Two approaches to evaluate sentiments are commonly adopted (i.e., approaches focused on machine learning algorithms and semantic approaches). The precise testing in this area was increased by the already advanced semantic technology. This chapter focuses on semantic guidance-based sentiment analysis approaches. The Twitter/Facebook data will provide a semantically enhanced technique for annotation of sentiment polarity.

INTRODUCTION

Opinions or ideals have become an essential component in making judgment or alternatives for people or businesses. The rapid boom of Web 2.0 over the last decade has improved online organizations and enabled humans to put up their reviews or evaluation on a variety of topics in public domains. This user-generated content (UGC) is an essential statistics supply to help clients make shopping decision,

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however also provided treasured insights for shops or manufacturers to enhance their marketing strategies and products (Pang & Lee, 2008). Sentiment evaluation deals with the computational treatment of critiques expressed in written texts (Kalra & Agrawal, 2017). In the era of Information explosion, there may be a huge quantity of opinionated statistics generated each day. These generated statistics leads to unstructured records and the analysis of these records to extract useful information is a hard to achieve task. The need to address these unstructured opinionated statistics naturally cause the upward push of sentiment analysis. The addition of already mature semantic technologies to this subject has increased the consequences accuracy. Evaluation of semantic of sentiments is precisely essential method in the internet now a days. Discovering the exact sense and understanding in which a specific sentence was written on the net is very important as there might not be any physical interaction to discover the significance of the sentence. There are a number of techniques to classify the specified sentiment as bad or horrible. This categorization helps us honestly discover the context of a sentence remotely (Gupta & Verma, 2019). The crucial troubles in sentiment evaluation is to express the sentiments in texts and to check whether or not the expressions indicate superb (favorable) or negative (unfavorable) opinions toward the challenge and to evaluate the correctness of the sentences that are classified. The motivation of writing this chapter is to understand the concepts related to sentiment analysis and the importance of semantic in sentiment analysis. The present chapter starts with basic of ontologies and their relation to sentiment analysis. The chapter further discusses semantic ontologies with concept forms and their relationships along with steps to develop a baseline model for simple analysis of sentiment using NLP. At the end of the chapter case study related to the sentiment analysis using R programming on the protests for CAA and NRC in India during December 2019 has been presented. The corpus of the case study has been built by collecting related articles from the Times of India and other leading newspapers of the India. Real time data has been extracted from twitter by applying the most frequent words as hash tags. Finally sentiment analysis techniques have been applied on twitter data to know the opinions of the people of country on the issue of NRC and CAA protest.

ONTOLOGY AND THE SEMANTIC WEB

Today the Internet has become a critical human need. People depend heavily on the Internet for their day-to-day tasks. World Wide Web (WWW) has rapidly become a massive database with some information on all of the interesting things. Most of the web content is primarily designed for human read, computers can only decode layout web pages (Kaur & Agrawal, 2017). Machines generally lack the automated processing of data collected from any website without any knowledge of their semantics.

This has become a concern because users spend a great deal of time comparing multiple websites. Semantic Web provides a solution to this problem. Semantic web is defined as a collection of technologies that enable computers to understand the meaning of metadata based information, i.e., information about the information content. Web Semantic can be applied to integrate information from heterogeneous sources and improve the search process for improved and consistent information (Jalota & Agrawal, 2019). The Semantic technologies allow the ontology to refer to a metadata.

Ontology is a description of a domain knowledge that includes various terminologies of a given domain along with the relationship between existing terms.