Chapter 5
Tasks, Approaches, and Avenues of Opinion Mining, Sentiment Analysis, and Emotion Analysis:
Opinion Mining and Extents

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ABSTRACT

Every successful business aims to know how customers feel about its brands, services, and products. People freely express their views, ideas, sentiments, and opinions on social media for their day-to-day activities, for product reviews, for surveys, and even for their public opinions. This process provides a fortune of valuable resources about the market for any type of business. Unfortunately, it's impossible to manually analyze this massive quantity of information. Sentiment analysis (SA) and opinion mining (OM), as new fields of natural language processing, have the potential benefit of analyzing such a huge amount of data. SA or OM is the computational treatment of opinions, sentiments, and subjectivity of text. This chapter introduces the reader to a survey of different text SA and OM proposed techniques and approaches. The authors discuss in detail various approaches to perform a computational treatment for sentiments and opinions with their strengths and drawbacks.

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INTRODUCTION

Opinion as stated by (Najjar & Al-augby, 2021) is an individual belief or verdict about a specific issue or entity. Opinion mining is a kind of performance analyses for a document arguing an object or an artefact and its features (Radi & Shokouhyar, 2021). It aims to defining a set of factors and then spotting the sentiment of the author concerning the defined object. Item classification has different successful approaches (Khedr, Idrees, and Elseddawy, 2016), in this research, we will focus on the text classification approaches.

The fields of sentimental analysis, opinion mining (Hassan, 2019) and emotion analysis (Peeyusha, 2020) precipitously gained outstanding reputation due to the opinionated nature of Internet data (Ahuja, 2017). Sharing views, thoughts, ideas, and sentiments opinions for products, services, movies, restaurants, hotels and even political opinions, is a typical Social Media activity (NehaGupta & Agrawal, 2020). Various disciplines, like educational (Idrees and Hassan, 2018) (Khedr, Kholeif, and Hessen, April 2015) (Khedr and Idrees, 2017A) (Khedr and Idrees, 2017B), agricultural (Hassan, Dahab,, Bahnassy, Idrees, & Gamal, 2015) (Hassan, Dahab, Bahnasy, Idrees, & Gamal, 2014), health (Hazman & Idrees, 2015), and business intelligence, can benefit a great deal from extracting valuable information (Badawy, Abd El-Aziz, Idress, Hefny, & Hossam, 2016) (Helmy, Khedr, Kolief, & Haggag, 2019) (Idrees, 2015) (Khedr, Abdel-Fattah, and Nagm-Aldeen, 2015). Processing such unstructured, informal style of data requires complicated analysis methods and techniques, which makes opinion mining problem a more advanced and more complicated problem in comparison to other text processing fields (Basiri & Kabiri, 2020).

Sentiment analysis is a category of data mining that measures the inclination of people's opinions through natural language processing (NLP) techniques to extract and analyze subjective data from the internet - mostly social media and similar sources (Păvăloaia, Ionut, & Fotache, 2020). The analyzed data quantifies the general public's sentiments or reactions toward certain products, people or ideas and reveal the contextual polarity of the information (Al-Yazidi, Berri, Al-Qurishi, & Alrubaian, 2020). It involves different NLP techniques for collecting and examining different data shared on social media. The process of information extraction is a very critical and challenging mission (Lee and Lau, 2020). The sentiment extraction techniques include machine learning (supervised and unsupervised), lexical-based approaches, text processing, classification, tokenization, stemming, tagging, parsing, semantic reasoning, wrappers, POS tagger, hierarchical word clusters, a dependency parser for tweets, annotated corpora and web-based annotation tools. By utilizing the techniques of NLP (Rajput, 2020) it is possible to analyze the web huge structured and unstructured data repository and to obtain feelings expressed in various comments, questions or requests (Samad, Khounviengxay, & Witherow, 2020). On the other hand, Opinion mining has a significant difference from Sentiment analysis. Opinion mining has various and diverse levels from those of sentimental analysis. Sentiment analysis value can be either positive or negative, opinion mining, on the contrary has a deeper level since it represents the authors opinion. The author opinion may be sad, happy, angry…. etc.

Challenges Facing Sentimental Analysis, Opinion Mining and Emotional Analysis

Traditionally, the communication was simply monologue or, at most a restricted two-way communication (Alison Attrill-Smith, 2020). Mostly, the communication was done without using any interactive means, mainly through e-mail. With the progression of time from mid to late 90s, slowly the conventional