Chapter 3

Deep Learning Approaches for Sentiment Analysis Challenges and Future Issues

Rajalaxmi Prabhu B.
NMAM Institute of Technology, India

Seema S.
https://orcid.org/0000-0003-1766-0841
M.S. Ramaiah Institute of Technology, India

ABSTRACT

A lot of user-generated data is available these days from huge platforms, blogs, websites, and other review sites. These data are usually unstructured. Analyzing sentiments from these data automatically is considered an important challenge. Several machine learning algorithms are implemented to check the opinions from large data sets. A lot of research has been undergone in understanding machine learning approaches to analyze sentiments. Machine learning mainly depends on the data required for model building, and hence, suitable feature exactions techniques also need to be carried. In this chapter, several deep learning approaches, its challenges, and future issues will be addressed. Deep learning techniques are considered important in predicting the sentiments of users. This chapter aims to analyze the deep-learning techniques for predicting sentiments and understanding the importance of several approaches for mining opinions and determining sentiment polarity.

1. INTRODUCTION

The explosion of social networks in recent years has resulted in a massive volume of user-generated data on the Internet. Sentiment analysis is a technique for discovering and evaluating good and negative behaviors, as well as associated feelings, in a text. (Lee et. al, 2018). Extracting the useful features from a large number of user reviews is considered a useful task. Sentiment analysis usually consists of patterns and opinions in the form of user reviews. The opinion mining process includes the part of text analytics, and also retrieving information. Feature weighting plays a major role in analyzing sentiments (Zheng et.al, 2018). Sentiment analysis techniques are used to express reviews, opinions, and political issues automatically from the web. The major aim is to learn a pattern to extract the features, words, aspects and opinion expressions, and competitive words. Feature extraction process aims to identify the aspects from the comments done by the customers, whereas the sentiment prediction determines the text containing the opinion about the sentences which mainly helps to determine the polarity either positive, negative and then finally we integrate these two phases to obtain the final result. Opinion mining analyses the opinions of people and their attitudes regarding several products and their attributes. Pattern classification is one of the most supervised learning models for analyzing data and several patterns are mainly used for classifying texts (Plazaleiva et.al, 2017). The important feature of sentiment analysis is to generate the review or summaries based on sentiments expressed based on product features. Product features can be extracted from sentences based on supervised and unsupervised methods (Schouten et.al, 2017). The idea is to restrict the material so that it is difficult to write grammatically sound expressions that express opinion. The study primarily describes many approaches for using user evaluations to uncover valuable patterns. The feature that makes sentiment analysis valuable is that it can tell whether a statement is favorable, negative, or neutral. In addition to their established position in NLP, deep learning models have an essential role in sentiment analysis for multiple datasets (Ain et al, 2017).They are also capable of learning the decision boundaries, because they can stack layers one on top of the other. In the general case, words are normally indicated using a high-dimensional vector space. Feature extraction is mostly determined by the context of the neural network. Mapping of words through the model with similar syntactic and syntactic properties will create meaning for the words. Hence recurrent neural network models are capable of analyzing sentences hence it is easy to analyze sentiments using these models.(Nair et.al, 2021). In this work, I am explaining several architectures for analyzing sentiments and exploring the uses of deep learning techniques its challenges, and future issues. Different deep learning architectures its benefits and drawbacks are also studied. This proposal incorporates sentence-level latent semantic indexing to assist with topic extraction, with further regularization

22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/deep-learning-approaches-for-sentiment-analysis-challenges-and-future-issues/293121

Related Content

Service Composition Based Software Solution Design: A Case Study in Automobile Supply Chain

Tong Mo, Jingmin Xu, Zhongjie Wang, Yufei Ma, Heyuan Huang, Yuan Wang, Ying Liu, Jun Zhuand Xiaofei Xu (2012). *Computer Engineering: Concepts, Methodologies, Tools and Applications (pp. 266-277).*

www.irma-international.org/chapter/service-composition-based-software-solution/62447

The Heart and Brain of SDN: SDN Controllers

Pranav Arora (2018). *Innovations in Software-Defined Networking and Network Functions Virtualization (pp. 100-126).*

www.irma-international.org/chapter/the-heart-and-brain-of-sdn/198195

Application Security for Mobile Devices1

Gabriele Costa, Aliaksandr Lazouski, Fabio Martinelliand Paolo Mori (2012). *Dependability and Computer Engineering: Concepts for Software-Intensive Systems (pp. 266-284).*

www.irma-international.org/chapter/application-security-mobile-devices1/55332

Security Issues in Distributed Computing System Models

Ghada Farouk Elkabbanyand Mohamed Rasslan (2018). *Cyber Security and Threats: Concepts, Methodologies, Tools, and Applications (pp. 381-418).*

www.irma-international.org/chapter/security-issues-in-distributed-computing-system-models/203516

Wavelet Transform Algorithms

Arvind Kumar Kourav, Shilpi Sharmaand Vimal Tiwari (2018). *Handbook of Research on Pattern Engineering System Development for Big Data Analytics (pp. 177-192).*

www.irma-international.org/chapter/wavelet-transform-algorithms/202840