Fake Product Review Detection

Abstract:

In today's digital world, the role that genuine reviews play towards the audience is massive, and with some companies employing deceptive or misleading reviews on their products to manipulate public opinion is a matter of concern. This research addresses the unavoidable task of fake product review detection by using advanced natural language processing techniques. Inspired by previous work utilizing TF-IDF and BOW features, our approach introduces Word2Vec embeddings for feature extraction, resulting in better performance and accuracy across various machine-learning algorithms.

The research deeply examines the detailed approach of pre-processing steps, highlighting the importance of tokenization, stemming, and Word2Vec feature extraction to collect and accumulate meaningful representations of text data. After running a detailed experiment and also after comparing the results of both methods, we establish that Word2Vec-based features yield higher accuracy compared to the TF-IDF and BOW methods.

Furthermore, the study evaluates the effectiveness of several classification algorithms, such as Random Forest, Support Vector Machines, K-Nearest Neighbours, Decision Tree, Naive Bayes, and Logistic Regression. The results prove that our Word2Vec-enhanced models every time outperform their counterparts, exhibiting the potential for robust fake review detection.

The implications of this research extend to multiple diverse online platforms, particularly e-commerce websites, where the proposed approach can be integrated to automatically identify as well as flag suspicious reviews. By enhancing the trustworthiness of user-generated content, this system empowers customers with more reliable and honest information, developing a transparent and genuine online shopping experience.