

FAKE REVIEWS DETECTION

Objective

Consumers that shop online consult reviews before deciding on any good or service. Because of this, the veracity of internet evaluations is critical for businesses and has a direct impact on their revenue and reputation. For this reason, some companies are paying spammers to create fictitious reviews. These fraudulent reviews prey on the decisions made by customers. As a result, over the previous twelve years, a great deal of research has been done on methods for identifying phony reviews. Still missing, though, is a survey that can evaluate and condense the current methods. In order to address the problem, this survey study summarizes the current datasets and their methods of collecting and describes the work of fake review detection. It examines the current methods for extracting features. Additionally, it provides a critical summary and analysis of the current methods to pinpoint any gaps based. The model demonstrated efficacy in identifying human-generated fraudulent reviews. The findings suggest that although it can be difficult for humans to identify fraudulent reviews, "machines can fight machines" when it comes to this task. Our findings have consequences for review platform accountability, business defense against unfair competition, and consumer protection.

LITERATURE REVIEW

Reviews that are written by persons with the intention of harming a brand's competitors or manipulating its reputation are referred to as fake reviews. Everyone has the freedom to openly share their beliefs without fear of repercussions. The main sources of bogus reviews include other online postings, social media platforms, and e-commerce sites. The opinions expressed have advantages as well as disadvantages. When accurate and reliable reviews are provided, they aid in the process of making decisions. Reviews that are posted with malicious intent try to improve or harm a company's or product's reputation. Opinion spamming is the term used to describe the actions of these individuals, who are referred to as opinion spammers. The significance of spam detection and the techniques used to do so are taken.

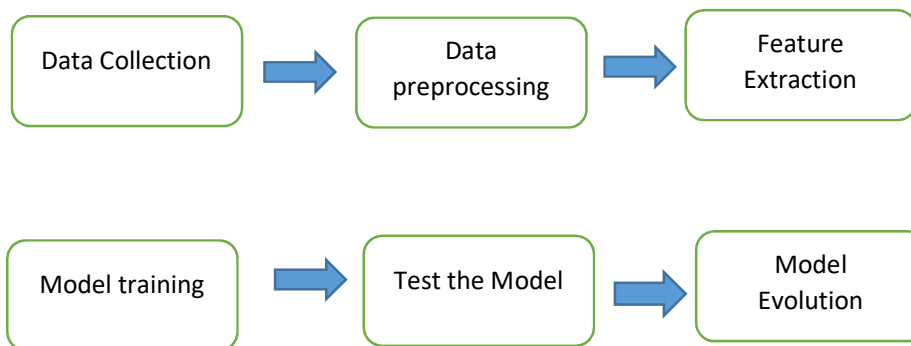
With the rise in online shopping, companies are attempting to establish a positive reputation with reviews. However, the proliferation of fraudulent evaluations has become a concerning issue as it misleads internet buyers during their transactions and either enhances or diminishes the standing of competing businesses. In this work, we present a supervised learning-based method for identifying fake reviews within an online review dataset. To differentiate between bogus and authentic evaluations, the research employs machine learning techniques such as logistic regression, Naive Bayes, and KNN. In the above paper we detect the fake reviews using Logistic regression .

Logistic regression is a supervised machine learning algorithm mainly used for classification tasks where the goal is to predict the probability that an instance of

belonging to a given class. This type of statistical model (also known as logit model) is often used for classification and predictive analytics. Logistic regression estimates the probability of an event occurring, such as voted or did not vote, based on a given dataset of independent variables. In the above paper we have dataset containing reviews of the home appliances that has two types of reviews OR (original reviews), CD (Computer generated), so we have dataset that already contain two types of reviews. First, we describe our dataset, collect information about the dataset and done some data cleaning step. We perform these operations by using the Natural-language-processing. Then by splitting dataset and some pre-processing steps we extract features for feature Engineering. Finally we build classification model by using Logistic regression. In the next step we are going to describe the methodology of the project in details. There are few steps in the methodology are given below.

METHODOLOGY

Steps in methodology



1. Data collection

In the Data collection process, we collect the dataset and extract different information from the dataset. Like row and columns in the dataset. After that, we are going to get some information like data types, value counts and null values that are present in the dataset.

Now after gaining all information about the dataset we are going to clean it by using some cleaning steps. We have done some cleaning steps in Natural language processing to clean the data. All the code is written in python. As you can see in the code file.

2. Data preprocessing

Data pre-processing, a element of data medication, describes any type of processing performed on raw data to prepare it for another data processing procedure. It has traditionally been an important primary step for the data mining process. More lately,

data pre-processing ways have been acclimated for training machine learning models and AI models and for running consequences against them.

Data pre-processing transforms the data into a format that is more fluently and effectively reused in data mining, machine literacy and other data wisdom tasks. The ways are generally used at the foremost stages of the machine literacy and AI development channel to insure accurate results.

The following steps are involved in the data pre-processing.

1. Data Cleaning

a. Missing Data:

1. Ignore the tuples:
2. Fill the Missing values:

b. Data Transformation:

1. Normalization:
2. Attribute Selection:
3. Discretization:
4. Concept Hierarchy Generation:

3. Feature Extraction

Feature extraction is part of the process of dimensionality reduction, which divides the initial set of raw data and reduces it into groups that are more manageable. Therefore, when you want to heal, it will be easy. The most important characteristic of these big data is that they contain a large number of variables. These types of variables require many computational resources to process. Therefore, feature extraction helps to get the best features from these large data sets by selecting and combining variables into features, thereby reducing the amount of data effectively. These features are easy to configure, but can still be used briefly in the beginning to define a good dataset.

Model Training

Feature extraction is part of the segmentation reduction process, which divides the original set of raw data and reduces it into manageable groups. Therefore, when you want to heal, it will be easy. The most important thing about this big data is that it has a large number of variables. These types of variables require many computational resources to process. Therefore, feature extraction helps to obtain the best features from these large datasets by selecting and combining variables within the features, thereby reducing the amount of data effectively. These plans are easy to set up, but may take a little time initially to define the correct data set.

Model Evaluation

Model evaluation is the process of using different evaluation metrics to understand a machine-learning model's performance, as well as its strengths and weaknesses. Model evaluation is important to assess the efficacy of a model during initial research phases, and it also plays a role in model monitoring.

Result

The performance of the proposed model is evaluated using the fake reviews dataset of 40432 reviews, which are divided respectively into the training set (30315 reviews) and the test set (10117 observations). The model achieved 91.4% accuracy, 90% precision, 91% recall, and 90% F1 score in the test set. . In terms of error analysis, the model made many errors in identifying fake reviews written in neutral or positive tones, as well as fake reviews using words that are more common. This shows that the model can benefit from using more advanced natural language processing techniques to better understand the research situation.

Conclusion

The research paper on detecting false positives using the Logistic Regression (SVM) algorithm shows the importance of solving the problem of True positive and the ability to use the Logistic Regression algorithm for this task. The proposed method, which combines text-based, feature-based features using to train Logistic Regression model, has been found to be effective in detecting Forged, working of traditional machines learning algorithm and rule-based systems. In the future, we can increase the accuracy of the proposed method using supervised and unsupervised machine learning.

References

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