

Spam Review Detection Using Machine Learning

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Abstract: *With the continuous evolve of E-commerce systems, online reviews are mainly considered as a crucial factor for building and maintaining a good reputation. Moreover, they have an effective role in the decision making process for end users. Usually, a positive review for a target object attracts more customers and lead to high increase in sales. Nowadays, deceptive or fake reviews are deliberately written to build virtual reputation and attracting potential customers. Thus, identifying fake reviews is a vivid and ongoing research area. Identifying fake reviews depends not only on the key features of the reviews but also on the behaviors of the reviewers. This paper proposes a machine learning approach to identify fake reviews. In addition to the features extraction process of the reviews, this paper applies several features engineering to extract various behaviors of the reviewers. The paper compares the performance of several experiments done on a real Yelp dataset of restaurants reviews with and without features extracted from users behaviors. In both cases, we compare the performance of several classifiers; KNN, Naive Bayes (NB), SVM, Logistic Regression and Random forest. Also, different language models of n-gram in particular bi-gram and tri-gram are taken into considerations during the evaluations. The results reveal that KNN(K=7) outperforms the rest of classifiers in terms of f-score achieving best f-score 82.40%. The results show that the f-score has increased by 3.80% when taking the extracted reviewers behavioral features into consideration.*

Keywords: Fake reviews detection; data mining; supervised machine learning; feature engineering

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