

# TOURIST PLACE REVIEWS SENTIMENT CLASSIFICATION USING MACHINE LEARNING TECHNIQUES

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## ABSTRACT

Social media is growing trend now a days. Every day millions of user review and rate tourist places on tourism websites. Sentiment analysis can be performed over these reviews which will be helpful to find tourist place popularity. Based on sentiment analysis result, tourist can easily decide tour destination to be visited. In this paper sentiment analysis has been implemented using machine learning approach. The Dataset has been collected from various tourism review websites. Here we have performed comparative study of feature extraction algorithms i.e. Count Vectorization, TFIDF Vectorization.

Along with classification algorithms Naive Bayes (NB), Support Vector Machine (SVM) and Random Forest (RF). Performance of algorithms has been compared using various parameters like accuracy, recall, precision and f1-score. From experiment we found that TFIDF Vectorization feature extraction algorithm has improved accuracy of classification algorithm as compare to CountVectorization for given review dataset. In sentiment classification of tourist place reviews TFIDF Vectorization

+RF has given highest accuracy 86% for a research dataset used.

**Keywords:** user generated content; sentiment analysis; classification; keyword extraction; text representation; sampling; machine learning; TripAdvisor

## I INTRODUCTION

Nowadays, social media is increasingly expanding. On a regular basis, millions of users post feedback and rank tourist attractions on travel websites. This study can be analysed using sentiment analysis. A proper study of ratings will reveal a rise in the popularity of tourist destinations. The emotion analysis findings will be summarised to assist visitors in deciding on a tour destination and itinerary. Two function extraction algorithms, Count Vectorization and TFIDF Vectorization, were used in this research paper. For emotion classification, three classification algorithms were used: Naive Bayes (NB), Support Vector Machine (SVM), and Random Forest (RF). On the basis of parameters such as execution time, accuracy, recall, precision, and f1-score, performance for a combination of feature extraction and classification algorithms has

been compared. This paper's material is organised as follows. In Section II, we look at literature polls on opinion analysis. The Basic Principle of Machine Learning is described in Section III. Section IV outlines our sentiment analysis methodology, visualisation, and performance assessment for tourist location review classification. The experimental implementation of tourist location popularity distribution estimation using machine learning algorithms is presented in Section V. The findings of the experiment are presented in Section VI. The comparative analysis of emotion analysis using machine learning algorithms used in the research review is presented in Section VII. This research paper comes to a close with Section VIII. The potential scope of the research paper is defined in Section IX.

**Materials and Procedures** Many measures are usually included in sentiment analysis [48]. The sentiment analysis method suggested in this paper involves the following five stages, as seen in Figure 1: Appl. Sci. 2020, vol. 10, no. 5, p. 22. 2. **Materials and Procedures** Many measures are usually included in sentiment analysis [48]. The sentiment extraction analysis method suggested in this paper involves the following five stages, as seen in Figure 1:

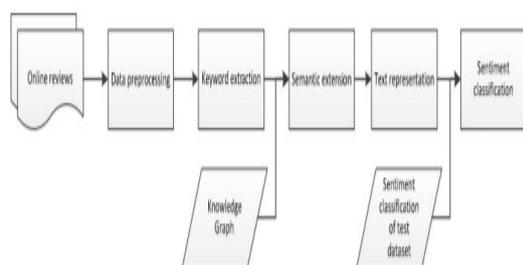


Figure 1. System framework.

(1) Information retrieval. The texts, namely English reviews of four popular attractions in four countries from the travel review website TripAdvisor, were used as sentiment analysis data in this study using a crawler software written in Python. This procedure is straightforward; but, due to space constraints, it will not be defined here.

(2) Preprocessing of data The steps involved in online comment text preprocessing are described

(3) Retrieval of keywords and semantic extension of statement language. Section 2.2 incorporates our online travel analysis text keyword extraction tool and keyword semantic extension system based on Microsoft Knowledge Graph in order to increase classification accuracy.

(4) The interpretation of text The text representation system based on Word2vec is introduced .

## II. RELATED WORK

The most often used language in Natural Language Processing research is English. The following are the most common methods used in this field: Machine Learning Subjective Lexicon A. Subjective Lexicon Approach The subjective lexicon approach is based on locating a viewpoint lexicon that analyses text emotion. There are two approaches of this approach: dictionary-based and corpus-based. Seeking an opinion collection can be done in three ways. Since the manual solution takes too long, it's usually paired with one of these two. Owing to a lack of money, Hindi is currently in short supply. There are three popular approaches to creating a subjective lexicon: - Utilization of a

bilingual dictionary[2] [2] Machine Translation Wordnet usage[4] B. Machine Learning Methodology Using features, a total function vector is created for each analysis. Classifiers are used to better classify these characteristics.

The emotion classification algorithm is applied to a separate set of inputs for each extracted function of the review. SVM, Neural Network, KNN, Random Forest, and other classifiers are examples. The following are some of the contributions in this field: Sruthi S et al. [1] recommend an object recognition approach for removing unnecessary details from feedback during the preprocessing period. SVM has a 95% accuracy rate, and the proposed sentiment analysis method is time and cost effective. Context necessitates the addition of more elements. Tirath et al. [2] used computing linguistic approaches to preprocess the data and derived features that are highly useful in determining the extremes of movie ratings. This approach examines six grouping methods. Random Forest outperforms the competition with a precision of 88.95 percent. The topic of feature extraction based on natural language processing (NLP) is not adequately addressed.

### III. METHODOLOGY

The suggested approach is demonstrated in this part. To begin, a tourism review dataset is created. Sentiment analysis is also possible. The suggested The algorithm is divided into three stages, each of which is described below. Preparing Datasets, Extracting Features, and The below are the classifications:

Preparation of the Dataset

The more disciplined you are with data, the better. the more stable and superior outcomes you will achieve to reach The procedure for preparing data for a report.

The machine learning algorithm can be summed up as follows:

two-step procedure:

Data collection is the first step.

Step 2: Text Preparation

1) Data Gathering

The system for preparing data has been demonstrated in

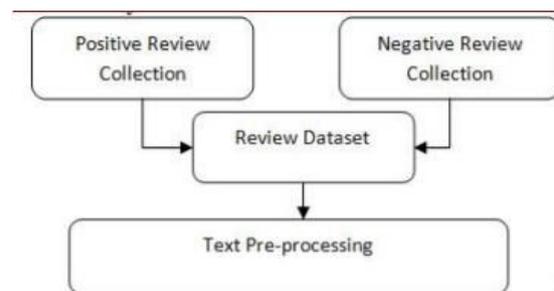


Fig 2 proposed model

## IV SYSTEM ANALYSIS

*EXISTING SYSTEM:*

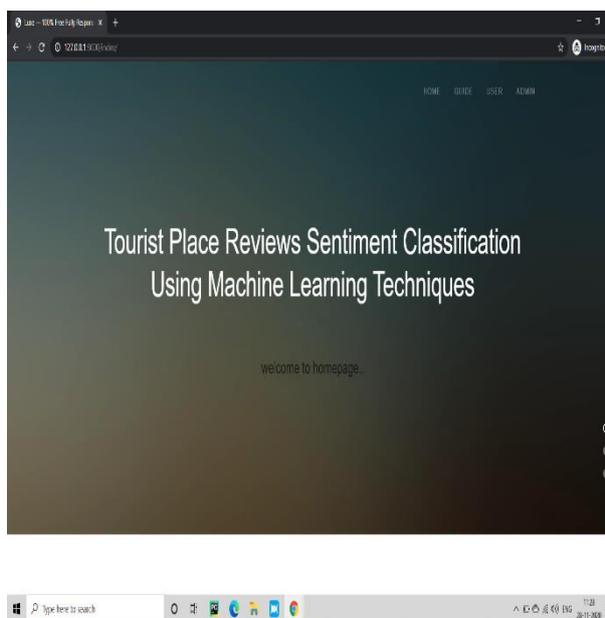
A customer can become an active user by giving reviews about different products/services which may be useful to other potential customers. But, there are hundreds, thousands or even more product/service related reviews available on the web and reading all those available reviews is a very tedious and taxing task for the customer. Therefore, there is a need gap for apt techniques which automatically summarize these reviews into a positive or a negative category to give useful information to the user.

*PROPOSED SYSTEM:*

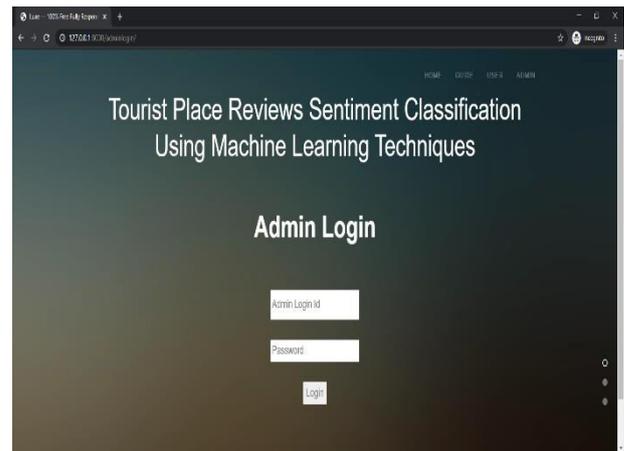
In the proposed method various techniques of sentiment analysis has been studied and compared. Different levels of sentiments are document level, sentence level, aspect level which has been elaborated Approaches used for sentiment analysis in this paper are machine learning based, Rule based and lexical based. Inside machine learning approaches various techniques are SVM (Support Vector Machine), NB (Naive Bayes), also feature driven sentiment analysis has been described in detail. Various approaches to sentiment analysis have been compared; its corresponding advantages and disadvantages are described in detail. From Various parameters of comparison like performance, efficiency, and accuracy it has been found that machine learning approach gives the best result.

## RESULT

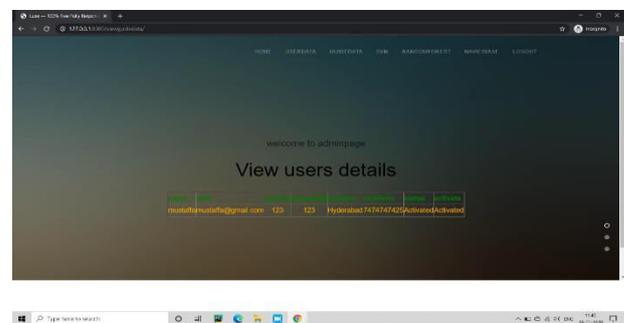
Home page:



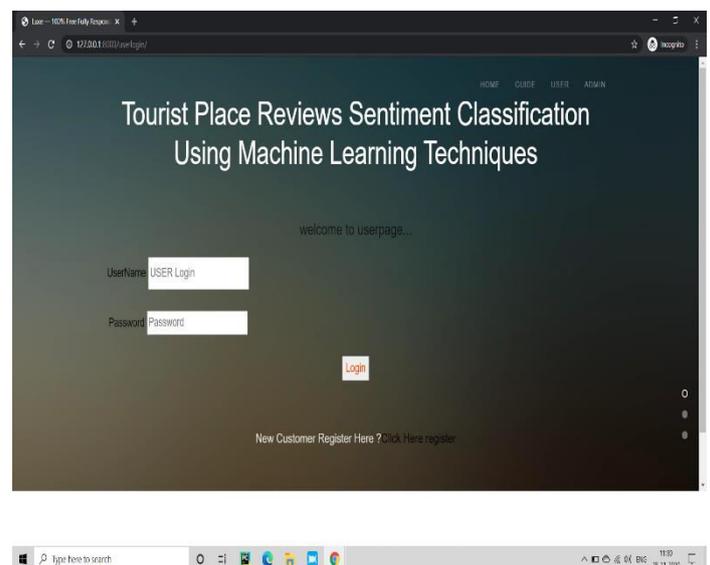
Admin page:



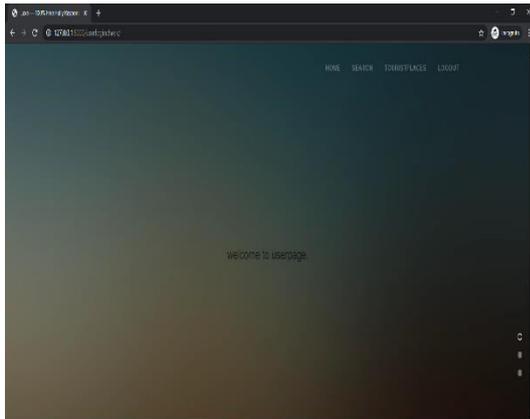
guide-details:



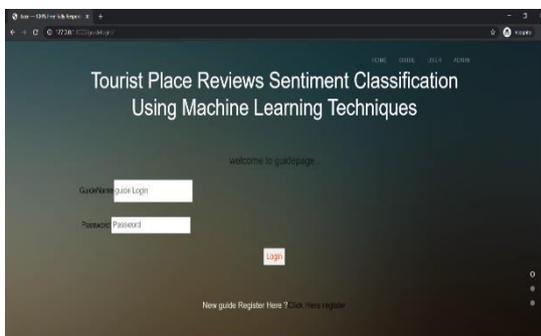
User login:



User home:



Guide login:



## CONCLUSION

In this article, a lexicon-based sentiment analysis system for tourist reviews with POS tags in the lexicon is presented. SentiWordNet assesses the emotion ratings of the instruction reviews (SWN). Then, using a machine learning technique, a lexicon-based emotion analysis algorithm is proposed for determining whether a review is positive or negative. The suggested approach increases the review's identification accuracy. Three classifiers are used to evaluate the proposed algorithm: support vector machine (SVM),

k nearest neighbour (KNN), and random tree (RF). Following simulation performance, KNN has an accuracy of around 80%, SVM has an accuracy of around 89 percent, and RF has an accuracy of around 93 percent.

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