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Hotel review analysis for the prediction of business using deep learning approach

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ABSTRACT

Sentiment analysis is a widely used topic in Natural Language Processing that allows identifying the opinions or sentiments from a given text. Social media is the scope for the customers to share their opinion over the products or services as part of customer reviews. Dissect this review has become an important factor for business analysis since online business is exponentially growing in today's techno-friendly competitive market. A large number of algorithms have been found in recent articles. Among those deep learning is an important approach. In the proposed methodology, long short-term memory (LSTM) and Gated recurrent units (GRUs) have been used to train the hotel review data where the accuracy rate of identifying customer opinion is 86%, and

84% respectively. The dataset is also tested by using Naive Bayes, Decision Tree, Random Forest, and SVM. For Naive Bayes obtains an accuracy of 75%, for Decision Tree obtains an accuracy of 71%, for Random Forest the accuracy is 82% and for SVM our accuracy result is 71%. Deep learning is used to obtain better business performance and also get the review from customers and also to predict the sentiment about customer review. Our algorithm works properly and gives better accuracy.

1.INTRODUCTION

In the age of modern science, everything is based on online and on the internet. Internet-based shopping has become easier and more popular because of better quality, and fast logistic systems. Internet-based shopping

and booking are very comfortable. People can easily make a booking without going outside. The most effective side part of online-based work is that people can give a review. Recognizing reviews allows others to easily understand the emotions of others and obtain the rationality result of different products [10].

In the hotel review, the prediction of business using Deep Learning was analyzed [24]. Many start-up businesses became failure due to lack of analysis and the sentiment of the customer. Sentiment Analysis is the most significant to improve a business site. Here, different type of data from social media as well as from the Hotel Management Website was collected using Unamo tools. And also some supervised and unsupervised data is used to predict the best result. This article will help to improve the business.

At present, online-based opinions can easily analysis with the help of Sentiment Analysis (SA). It is the management of sentiments, different opinions, subjective text, and different emoji used for giving reviews. People can easily get the comprehension information related to people reviews. Mainly Sentiment analysis is one kind of tool that helps to get the public

sentiment. By capturing reviews of product or location or person might be found from a different internet-based site like Face book, Amazon. Sentiment Analysis is used to increase the requirement of analyzing and structuring hidden information which comes from social media in the form of unstructured data. A huge amount of data is used due to the capability of automation and can handle a huge amount of data. A different type of font [23] of review are further classified.

2. EXISTING SYSTEM

In our modern science, many authors work on sentiment analysis. R. K. Bakshi addresses his article about sentiment analysis and how to do it on the opinion of humans [1] [22]. Later on, L. Yang analysis on e-commerce review using the deep learning method. The author shows the CNN and GRU technology [2] in that case accuracy was excellent but another e-commerce review is not at good analysis in CNN algorithm. Hemalatha S., the author describes the notion investigation are the audits on eateries about food, administration, cost , and feeling. Machine Learning calculations in the nltk library of python can end up being exceptionally valuable in any

such exploration of Natural Language Processing and the library has been utilized broadly in this work [3]. Zeenia Singla also analysis on e-commerce review [8] and she demonstrates her methodology portrayed characterization of surveys as useful to assess the item comprehensively, empowering better-dynamic for customers [4]. These days, social sites like Facebook, Twitter are generally utilized for posting the client's audits about various things, for example, films, news, food, style, governmental issues, and considerably more. Charu Nanda writes in her research sentiment Analysis on film audits in the Hindi language is examined [5].

Online audits received familiarity as individuals are making choices with the assistance of them. In the future most of the choices are based on Artificial Intelligence (AI). Similarly, many creator examinations on client audit in the various cycles. In this manner, the business future can be anticipated [6] [7] [9]. Hui Yuan, the author designed a novel social media analytics framework on top of Apache Spark for predicting and visualizing consumers' opinion orientations based on their relationships with other consumers whose opinion orientations are known. For analysis

of customer opinion, they use stateof- the-art collective classification (CC) algorithms. This algorithm considers not only user's local features but also their relational features [10]. Some authors contribute to this analysis system about many other language comments and reviews [14] [15]. They are delectable about e-commerce sentiment analysis [16] [18].

Disadvantages :

- In the existing work, the system did not find sentiment timeline and finds difficulties in topic modeling.
- This system is less performance due to lack of community sentiment dynamics expressed on Hotel Reviews.

3. PROPOSED SYSTEM

In the proposed system, different types of an algorithm are used for the analysis of sentiment of customer. In research work, the analytical part depends on evaluation or developing an algorithm. Though the work, a dataset of the business sector and the dataset from the different website along with some procedure can be developed. In the modern era, natural Language Processing is mostly effective in the machine learning part. In that case

sentiment analysis [22] [23] is most important in any business future. In this method, initially collect the data then process the data for our algorithm purpose. These data are trained by deep learning algorithms [19] such as LSTM and GRU where the prediction accuracy in up to 86% in different epoch.

Finally, classify the reviews in machine learning algorithms like Naive Bayes, Decision Trees, Random Forest, and SVM and compare their accuracy level. Sentiment Analysis refers to the use of natural language processing, text, and emoji analysis to identify, extract, qualify, and study affective states. It is mainly applied to the voice of the customer like the customer opinion, survey response which will give in a different type of social media or sites. Initially, collect some data from the dataset which is unsupervised through Unamo tools from social media. Later on, some unsupervised algorithms were used on those dataset for classification, and some supervised algorithms are utilized.

Advantages

- It is the management of sentiments, different opinions, subjective text, and different emoji used for giving reviews. People can easily get the comprehension information related to

people reviews. Mainly Sentiment analysis is one kind of tool that helps to get the public sentiment.

- A huge amount of data is used due to the capability of automation and can handle a huge amount of data. A different type of font of review is further classified.

4. OUTPUT SCREENS

LOGIN PAGE



REGISTER



PROFILE DETAILS:



PREDICTION OF HOTEL REVIEW ANALYSIS

PREDICTION OF HOTEL REVIEW ANALYSIS TYPE ID

User ID	<input type="text"/>
Username	<input type="text"/>
Mobile	<input type="text"/>
Enter Hotel Review Here	<input type="text"/>

LOGIN SERVICE PROVIDER



USER DETAILS :

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ALL DETAILS LISTED IN

USER NAME	EMAIL	MOBILE NO.	ADDRESS	STATUS
John	John123@gmail.com	9876543210	123 Main Street	Active
Jane	Jane456@gmail.com	1098765432	456 Park Avenue	Active
Mike	Mike789@gmail.com	3210987654	789 Broadway	Active
Alice	Alice101@gmail.com	5432109876	101 Wall Street	Active
Bob	Bob202@gmail.com	8765432109	202 Broadway	Active

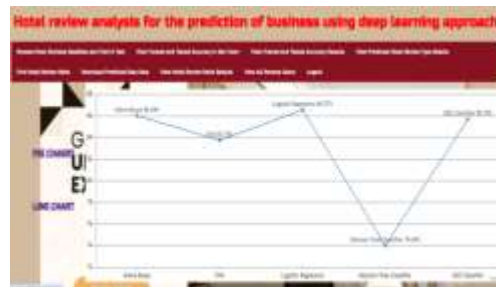
BAR CHART :



PIE CHART :



LINE CHART :



TYPE DETAILS :

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ANALYSIS OF HOTEL REVIEW ANALYSIS TYPE ID

User ID	Review	Username	Mobile	Address
1	The view was great and the food was delicious. I will definitely return.	John	9876543210	123 Main Street
2	The service was excellent and the staff was very helpful. I will recommend this hotel to my friends.	Jane	1098765432	456 Park Avenue
3	The room was clean and the bed was comfortable. I will stay here again.	Mike	3210987654	789 Broadway
4	The location was perfect and the view was amazing. I will book here for my next trip.	Alice	5432109876	101 Wall Street
5	The food was delicious and the service was outstanding. I will definitely return.	Bob	8765432109	202 Broadway

REVIEW TYPE RATIO :



RATIO REPRESENTED IN LINE CHART :



RATIO REPRESENTED IN PIE CHART :



VIEW ALL REMOTE USERS :

ID	NAME	EMAIL	PHONE	ADDRESS	CITY	STATE	COUNTRY
1	John Doe	john.doe@gmail.com	9876543210	123 Main St	New York	NY	USA
2	Jane Smith	jane.smith@yahoo.com	1234567890	456 Elm St	Los Angeles	CA	USA
3	Mike Johnson	mike.johnson@outlook.com	0987654321	789 Oak St	Chicago	IL	USA
4	Sarah Brown	sarah.brown@icloud.com	2345678901	101 Pine St	San Francisco	CA	USA
5	David Wilson	david.wilson@protonmail.com	3456789012	202 Birch St	Seattle	WA	USA

5. CONCLUSION

The present age is the modern age. Everything in the age is now technology dependent and every person in the country is able to familiarize themselves with this technology. With the help of that technology, online marketing has become popular in today's world, which has easily become popular among people. People are now getting a lot of things through their hands very easily. One part of online marketing is the online hotel booking system. With this people can easily pre-book the hotel of their choice and they can easily go to their hotel without having to bother to search for the place. It has become the most popular among people and this led to an increase in the number of people traveling around. And at the same time, they can able to view different beautiful places of the world by taking advantage of this hotel booking. In the future, many more features can be added to the project and ensure more popular things.

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