



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

PUBLIC RELATIONSHIPS USING NLP AND MACHINE LEARNING

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ABSTRACT:

In today's world where we continue to use technology, online reviews influence the way people view products and services. The project dives deep into sentiment analysis, using natural language processing (NLP) and machine learning tools like logistic regression and Naive Bayes to predict product quality based on user input. The project creates a powerful model that can interpret the intent expressed in the message through processes such as tokenization, word removal, and feature removal. The project aims to determine whether comments have a negative impact by training logistic regression and Naive Bayes classifiers on processed data. The findings highlight the effectiveness of using NLP methods to identify products and provide insight for businesses looking to better understand public opinion.

INTRODUCTION

This project uses advanced techniques in natural language processing (NLP) and machine learning to delve into the world of product analytics to

predict the needs expressed in the review. This project uses different data including analysis, evaluation and interpretations using different methods such as tokenization, feature extraction and model training to determine the hypothesis. The main goal is to provide a deeper understanding of online customer sentiment to help businesses make more informed decisions. It analyzes differences between these reviews, such as the language used and the overall assessment, to determine whether the opinion expressed is positive or negative. By doing this, businesses can provide better information to their customers about their products in the digital world. The main purpose of these investigations is to distinguish between good and bad. The project aims to enable businesses to better understand public opinion in the digital age by analyzing a series of reviews, assessments and recommendations. The program helps organizations understand their customers' emotions by highlighting the importance of NLP in classifying and understanding offers. The main purpose is to predict product quality based on

feedback from customers. The project aims to evaluate the opinions expressed in the comments and identify negative opinions by using techniques such as logistic regression and Naive Bayes. This demonstrates the effectiveness of NLP in organizing and interpreting messages, thus providing businesses with a better understanding of public opinion. thoughts. Using language processing and machine learning, the aim is to enable businesses to better understand public opinion, thus helping to make better decisions. Finally, the results of this study highlight the importance of understanding consumers' emotions in the digital age and demonstrate the effectiveness of NLP in achieving this goal.

LITERATURE SURVEY

Study of Sentiment Analysis with Product Reviews Using Machine Learning:

This in-depth study covers a wide range of research topics, focusing on Amazon reviews. Supervised machine learning such as logistic regression provides detailed information from different methods such as support vector machines and gradient boosting to dictionary-based methods such as VADER, Model and SentiWordNet. This study rigorously evaluates these methods using performance metrics such as accuracy, precision, recall, and F1 score to make comparisons between different models. However, research results show that the machine learning model works better than the descriptive method on all indicators. More importantly, Support Vector Machines, Gradient Boosting, and Logistic Regression, Model consistently demonstrate greater accuracy and precision, than dictionary models such as VADER and SentiWordNet. This shows the effectiveness of machine learning algorithms in analyzing emotions, providing a better understanding of their

performance compared to other methods. It provides detailed information on a variety of methods, including supervised machine learning such as logistic regression, support vector machine, and gradient boosting, and dictionary-based methods such as VADER, Model, and SentiWordNet. This study rigorously compares these models by evaluating performance using metrics such as accuracy, precision, recall, and F1 score. Of particular note, Support Vector Machines, Gradient Boosting, and Logistic Regression, Model consistently provide greater clarity and accuracy, than dictionary models such as VADER and SentiWordNet. This demonstrates the effectiveness of machine learning algorithms in sentiment analysis, providing insight into their best performance compared to other methods. Demonstrate the effectiveness of machine learning techniques compared to dictionary techniques. By carefully examining various models using performance indicators, it provides an understanding of the strengths and limitations of each method, ultimately helping to gain a deeper understanding of emotional intelligence in the context of Amazon reviews.

Thumbs up? Sentiment Classification using Machine Learning Techniques:

The research used three computational methods: Naive Bayes, Maximum Entropy Distributions and Support Vector Machines to understand what people think about analytics. While these techniques may work in other situations, they don't work as well when it comes to understanding emotions expressed through words. This difference has led researchers to wonder why emotional intelligence is more difficult than other types of rankings. Small details like how people talk, different ways of expressing emotions

depending on the situation, how each person feels differently are important. By looking at these points, the study hopes to help us understand why it is not easy to understand emotions in words and offers some ideas to make this even easier. They are not good at understanding emotions expressed in words. This suggests that we need to learn and understand more about what emotions are being expressed so that we can create a better way to understand emotions in future messages. Maximum Entropy Classification and Support Vector Machines - Find out what people think in their own words. While these techniques may work in other situations, they don't work as well when it comes to understanding emotions expressed through words. This leads researchers to wonder why it is harder to understand the emotions in words than the content. Small details like how people talk, different ways of expressing emotions depending on the situation, how each person feels differently are important. By looking at these points, the study hopes to help us understand why it is not easy to understand emotions in words and offers some ideas to make this even easier. They are not good at understanding emotions expressed in words. This suggests that we need to learn and understand more about what emotions are being expressed so that we can create a better way to understand emotions in future messages.

EXISTING SYSTEM

In these existing models, the Universal French model supported by logistic regression, Naive Bayes and natural language processing (NLP) is the basis. These ideas will help improve the quality and efficiency of the model in understanding and producing French products. This study focused on character analysis, possibly focusing on French literature. By combining design with the best

linguistic methods, the project attempts to provide insights from literature, possibly for customer feedback or business research copy. Leverage advanced NLP techniques, including modeling such as logistic regression and naive Bayes, as well as advanced techniques for identifying and understanding underlying patterns in collected data.

Disadvantages

- This was actually developed using already existing model (General French Language Model).
- It was developed on the reviews that are in French language. It will not work on English reviews.
- It has some components which are well advanced and requires high-end computers or machines to work efficiently.
- Complex language models may lack interpretability, making it difficult to understand the rationale behind their predictions or decisions, which can be problematic in applications where transparency and accountability are crucial.

PROPOSED SYSTEM

The campaign uses computer algorithms to understand the opinions expressed in Amazon reviews. We use logistic regression and Naive Bayes methods for this purpose. Logistic regression is a linear classification algorithm that predicts the probability of a binary outcome (such as a positive or negative emotion) as an independent variable. Naive Bayes, on the other

hand, is a classifier that assumes the freedom to assign a class list and is generally effective in classifying text despite its simplicity. Organize data by resolving missing data and analyzing data. We use graphical representations like heatmaps, histograms, and word clouds to understand data. We then clean up the text by removing punctuation marks and used words, and then place the words into numbers that are important for computer analysis. model.

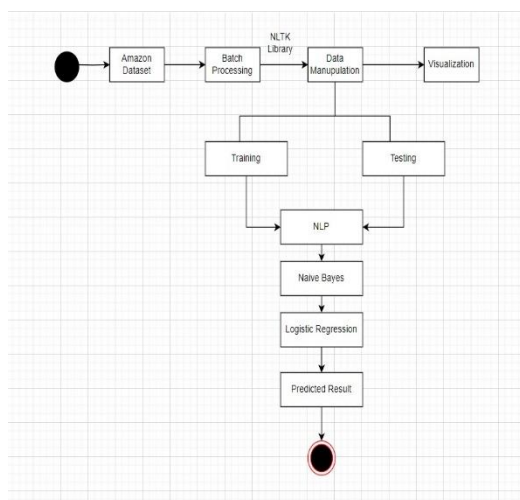


Fig 1: Activity Diagram

Advantages:

- Using powerful and effective machine learning algorithms like naïve bayes and logistic regression in this project made it more accurate than other existing models.
- NLP technology can be used to automate the generation of press releases, blog posts, social media updates, and other content. This not only saves time and resources but also ensures consistency in messaging across different channels.
- NLP-powered tools can monitor online conversations and news mentions in real-time. This allows PR teams to stay informed about public sentiment, emerging

trends, and potential issues, enabling timely responses and proactive management of brand reputation.

- It has better performance than existing models and This model's predictions are better than existing ones.
- It doesn't need any special requirements of PC to run properly.
- It is very simple and easy but at the same time very effective.

CONCLUSION

In summary, sentiment analysis using natural language processing (NLP) and machine learning (ML) techniques has the capacity to uncover insights from data across transcription sectors. Change the way you understand what customers want and how your business can make them more satisfied. It helps them plan smarter and make better decisions overall. This improves communication skills, audience engagement and reputation management.

By leveraging NLP algorithms, PR professionals can perform data processing, sentiment analysis and content creation, gaining more information from social media, news and customer feedback while saving time and resources. Machine learning algorithms further enhance PR efforts by supporting audience segmentation, predictive analytics, and personalized communications based on individual preferences and behavioral patterns.

FUTURE SCOPE: In the future, advances in NLP and ML for sentiment analysis and PR are promising. Emerging technologies will improve algorithms to gain deeper insights across industries. Integration of deep learning can improve the perception of emotions and better

understand people's words and behaviors. PR can combine weather analysis and forecast models for forecasting. A good understanding of natural language will make personal communication possible. Multimodal analysis can provide a comprehensive view of consumer sentiment. Data processing is very important. Overall, the future of using NLP and ML in effective communication, audience engagement, and reputation management is bright.

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