Shopping based on Product Review Analysis and Virtual Try-on using Machine Learning

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***Abstract*— As online marketplaces have grown in popularity over the last several decades, online vendors and merchants now require their customers to provide feedback on the things they have purchased. As a result, millions of evaluations are created every day, making it impossible for a potential buyer to make an informed judgement about whether to purchase the goods. Analyzing such a large number of comments is extremely difficult and time consuming for product makers. This project looks at the challenge of categorising reviews based on their overall meaning. Reviews on online buying sites are not only about the goods but also about the service provided to clients. It would be simpler for customers to make decisions if they have a clear separation between product and service ratings. In this project, we present a system that conducts categorization of customer reviews followed by determining sentiment of the reviews. Product feature sentiment is also being extracted using rules. We also define graphics for our outcome summary. This system also includes virtual clothing try-on that enables the users to virtually try-on the desired clothes and accessories before purchasing them which makes it easier for the customer to decide which product to buy. Another advancement included in this proposed model is a live tracking system that gives the live location of the ordered product from the time the delivery agent is out for delivery until the product is delivered to them.**

Keywords—Product reviews, virtual try-on, online shopping, live tracking system.

I. INTRODUCTION

Users may rate and assess items on online buying platforms using star ratings and text evaluation. At the same time, other users can assess the above text comments a second time to see if they are valuable. There are now several issues with internet purchasing, such as negative customer feedback, positive vendor ratings, and so on. Formally, sentiment analysis has been described to as a type of analysis that employs natural language processing, some form of computational linguistics, and text mining. When an individual makes a decision, that decision or thinking may be impacted by the influence of others. Furthermore, the internet serves as a venue for this. Using Flipkart.com as an example, the customer feedback system allows them to rate the items they get from Flipkart while also allowing other consumers to make better educated decisions by making the ratings available to other customers to examine before making a purchase choice. Almost every organisation today is in a rush to figure out whether people appreciate their products and services, what consumers think, and what kinds of things they prefer. When organisations needed the general public or purchasers' opinions, they needed to conduct opinion polls, which might be costly and time-consuming, as well as requiring human resources. This raises issues that may not be easily solved with standard text categorization techniques. As a result, methodologies for classifying views must be included into a simpler text classification tool, or systems that can properly evaluate and identify attitudes in text must be developed.

Because of the numerous benefits of e-commerce, internet shopping has grown in popularity in recent years. Furthermore, during the COVID-19 crisis, this sector has become even more valuable to customers since it allows them to preserve social distance. However, if we concentrate focus on purchasing clothing through an e-commerce website, the point that becomes a significant impediment is trialling. Finally, when it comes to product delivery, there is no option for live tracking on today's e-commerce websites; such a way should be created so that customers can simply follow the purchase. After numerous sentiment analyses as well as many other types of methodologies categorise the reviews based on test data and reviewer ratings that employ training, it is discovered that star rating of reviewer does not always offer a perfect assessment of his sentiment. This research is primarily concerned with assessing consumer feedback from the e-commerce industry. According to a poll of leading e-commerce websites, the product rating given by a consumer is not always compatible with the product review made by him/her. The challenge is complicated by the lack of a standard scale to quantify the user's rating, and the rating of the product is instinctual in the consumers' eyes. In various occasions, a product is given 4 out of 5 stars. However, the reviews indicate that the customer's experience with the goods was negative. Text reviews, in fact,

provide an accurate representation of the product. To address this issue, the mentioned system will provide a boolean result, indicating whether the product is excellent or terrible, and the user will not be required to read all of the reviews in order to examine the product.

This technique is intended to enhance the customer's shopping experience by projecting goods of interest or that he is likely to acquire. This saves time spent looking and helps to keep the client interested in buying. It has also taken care of effectively introducing a new product so that it receives the attention of the correct client, i.e. assessing the customer's taste such as brand, cash, etc., only such items are emphasised. This suggests that the goods will be sold quickly. Some of the connected goods can also be purchased together without the need for further research. This method will also benefit our e-commerce system's apparel sector by making buying more convenient, as it will be able to transfer a human model's clothes to a buyer's physique in the image, assisting him/her in choosing on a suitable product to purchase. This method also allows for live tracking of the order from the time the delivery person is out for delivery till the product is delivered to the consumer.

II. RELATED WORK

There is a need to include opinion classification approaches into a simpler text classification tool, or to construct systems capable of properly analysing and categorising sentiments in text. Sentiment analysis is a type of contextual mining that aids in the identification and extraction of subjective information or data. When a company monitors online conversations, this form of extraction helps them understand their brand's social sentiment or product or service. The application of sentiment analysis in several sectors like as corporate intelligence, research, public relations, e- government, and online search has increased the necessity for sentiment analysis in recent years. [1] After numerous sentiment analyses as well as many other types of algorithms categorise the reviews based on test data and reviewer ratings that employ training, it is discovered that the star rating of the reviewer does not always provide a perfect assessment of his sentiment. This article is largely concerned with assessing customer feedback from the e-commerce industry. According to a poll of leading e-commerce websites, the product rating given by a consumer is not always compatible with the product review made by him/her. The situation is made complex by the fact that there is no standard scale for measuring the rating that the user offers, and the ranking of the product is instinctual in the consumers' opinion.

[2] Rapid urbanisation and digitalization, rising middle-class affluence and lifestyle changes are causing a huge upheaval in the retail business, particularly shopping malls. Almost major city in India now has multiple shopping malls, and as the population grows, so do the lines for trying on garments at these shopping malls. This paper is a study on how to solve this problem and improve the shopping experience for customers.

[3] Because to the advancements in the Internet and technology, it is now feasible to buy and utilise various sorts of items and services online rather than in person. In particular, since the size of online shopping malls has grown fast, various features have been tested and implemented to compensate for the constraint of not being able to actually wear clothes in an online mall. Among these, 3D virtual try-on is an innovative service whose technology is constantly being enhanced. Technological advancements and interest in 3D virtual try-on have resulted in a number of related research. Most prior research on virtual try-on have focused on the virtual fitting technology from the standpoint of creating garments, or on the impacts and consumer behaviour from the standpoint of the customer.

[4] The app is an augmented virtual reality programme that recognises the user at close range and allows them to visually try on garments. The unique aspect of this application is that image processing and computer vision will be utilised to estimate the size of a person's shirt, waist, and so on using the Kinect V2 perceptual computing kit rather than simply enabling the user to try on virtual clothes. These garments may be displayed online among friends or directly utilised for printing and producing the shirt with a CO2 laser from a robotic arm, which is outside the scope of this research. Rather than depending just on Gaming or Motion Control Frameworks, the modelling of fabric that is to be augmented on the virtual human body is being built with competent geometric algorithms. The findings are evaluated using the most recent Kinect V2 sensor, which gives users with a compelling experience to choose from. The article first provides an overview of the primary technological components for a comprehensive virtual try-on system, before delving into numerous critical problems such as Kinect calibration and calculation of measurements for particular subjects such as clothing, etc.

[5]There has been a significant growth in interest in internet purchasing. In the event of purchasing things such as garments, a feeling of awareness on how cloths will fit on a person is always required. This is the primary reason why fewer people purchase for clothing online.

III. METHODOLOGY

A. Proposed System

The live data of many e-commerce sites will be collected in this work utilising their respective URLs. Customer feedback on the product will be included in the data gathered. In order to find the viewpoints, the machine will crawl the URLs. We are scraping data from the internet in order to provide precise opinions based on the user's needs. The data crawled from the website will be parsed to extract the reviews, which will then be analysed and processed. This method differs from the old approach in that it makes use of live data from the sites rather than pre-existing data sets. This system also offers virtual clothing try-on, which allows users to virtually try on desired garments and accessories before purchasing them, making it easier for the buyer to determine which goods to purchase. The user can upload a photo of themself to be utilised for the virtual try-on. If the photograph contains numerous people, the technology also allows the user to pick the individual in the image on whom the dress is to be tried on. A live tracking system that provides the live position of the requested goods from the moment the delivery agent is out for delivery till the

product is delivered to them is another development incorporated in this suggested model.

B. Algorithm

a) *Algorithm: Feature Extraction*

Input: The text pre-processed by porter stemmer by eliminating production that make word incorrect.

Output: The overall rating or score for the given paragraph or sentence.

Steps:

1. Fill the data into the input buffer containing 3 main buffer fbuffer, mbuffer, and rbuffer.
2. Check the word in the fbuffer to see if it is a product name. If it is, pass the phrase to the special case handling module.
   a. If the fbuffer does not have a product name, look for an mbuffer with the same condition.
3. Check whether the mbuffer contains the word in the bag_of_words
   a. If it includes a match, then extract the score depending on the previous word, i.e. if the preceding word contains a negation, then fetch the score from the not column; otherwise, fetch the score from the is column.

   b. If the preceding word includes score booster, then increment the current score depending on the preceding word; otherwise, reduce score or increment score.
   c. Repeat steps 2 and 3 until the full text is processed or you don't come across a product name.

b) Algorithm: Special Case Feature Extraction

Input: Remaining input of the main feature extraction algorithm

Output:The overall rating or score for that paragraph or sentence.

Steps:

1. Check to see if the product name discovered includes the name of the product for which the review is written.
   a. If yes then set diffProductFlag = false
   b. Else set diffProductFlag = true
2. Check for tense of the verb.
   a. Set tFlag to true if verb is in present tense.
   b. Set tFlag to false if not.
3. Shift the window until product name or special word is found. a. if mbuffer is negator then set sbuffer to mbuffer+1.
   i. Shift the window until a word in the dataset matches a word in the sbuffer.
   ii. Obtain the negator's rating, store it in a temporary location, and set the special flag to true.
   b. else obtain the rating and store in temporary location and store mbuffer content in a variable called specialvar 4. search for product name or full stop.
5. Create two windows, one for forward searching and one for backward searching, each with a buffer containing the product name.
6. In reverse window, search negator from mbuffer to special variable content and set flag to true if found, otherwise false.
7. In the reverse pane, look for dataset word matches from mbuffer to special variable content. If the change is false, retrieve the negator's rating; otherwise, retrieve the positive rating.
8. Proceed with the forward window in the same way as previously performed with the forward search in the main algorithm steps.

C. System Architecture

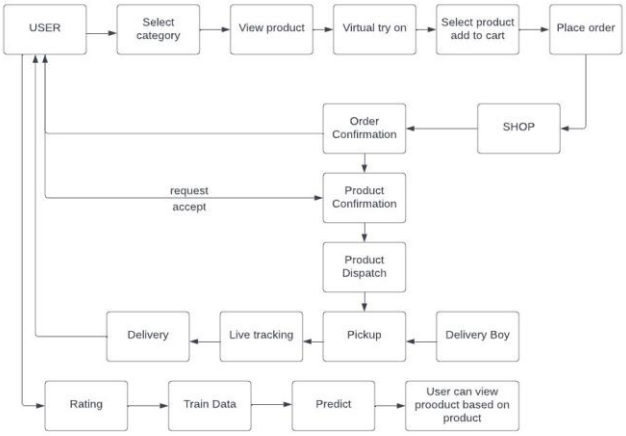

Fig.1.system architechture

The user can view the product review classification of the product of their choice and then they can virtually try-on the product and after that they can place the order. After receiving the order the user can give their review of the product and this review will be used as training data for further classification.

D. Data design model

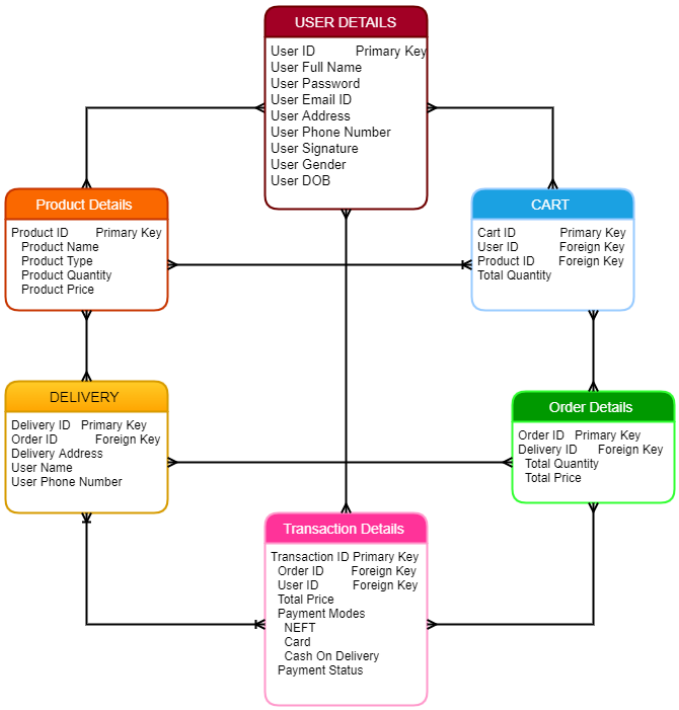

Fig.2.Data design model

E. User diagram

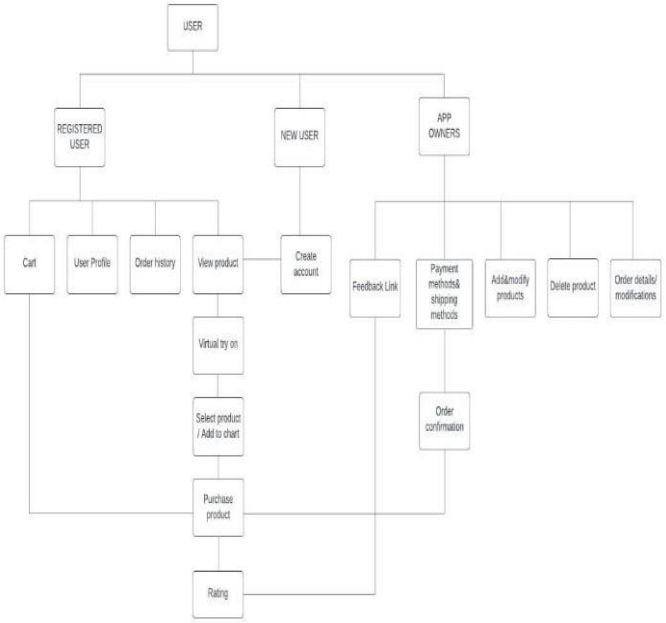

Fig.3.User diagram

IV. RESULT & PERFORMANCE ANALYSIS

The user can login in to the website by using their unique user id and password and if they are new users and have not already registered then they can register and create their account by creating a unique user id and password. After they login they can view the shops and see the products under the selected shop. And also, they have the option to search for a required product of their choice. After viewing the product, they can virtually try-on the product by inserting a photograph of themselves. If the photograph contains more than one person, then the system will allow us to select the person of our choice and allow virtual try-on of that product. There are options for reading the reviews of the products and also sort the products by rating. Once the product is added to the cart, the order can be placed and the payment can be made using the various payment options available and after successful completion of the payment, the shop will confirm the order.

Once the order is confirmed, the shop will send a picture of the actual product before packing it. The user can verify the product by examining the picture and give the final confirmation.

After the product is packed and dispatched, the user can track the live location of the product using a GPS system. The dispatched product will be collected by the delivery partner and it will be delivered to the provided address.

The user can write their reviews regarding the received product using the feedback link provided by the shop. The review will then be used for training data and it will be classified into three categories ie. happy, sad, shame and based on this classification the recommendation system of the user will be updated .

V. FUTURE SCOPE

The working of sentiment analysis in the domain of microblogging is still evolving and far from perfect. We should gather some ideas for future growth and performance improvisation. The project may be improved to accept input as the product's Url. The reviews may then be extracted directly from the website that was entered. Currently, the feature displays sentiment based on product feedback. It may be improved further by displaying sentiment based on product and seller reviews separately. It may be hosted on the internet using a different database format. It may be expanded to include other ecommerce sites.

VI. CONCLUSION

This system is being designed to enhance the customer's shopping experience by projecting goods of interest or that he is likely to purchase. This saves time spent searching and helps to keep the client interested in buying. It has also taken care of effectively introducing a new product so that it attracts the attention of the right client, i.e. assessing the customer's taste such as brand, cash, and so on, only those things are emphasized. This means the products will sell quickly. Some of the connected goods can also be purchased together without the need for further research. This method will also benefit our e-commerce system's apparel sector by making buying more convenient, as it will be able to transfer a human model's clothes to a buyer's physique in the image, assisting him/her in choosing on a suitable product to purchase. The user can manually upload a picture of themselves that will be used for the virtual try-on. The system also allows the user to select the person in the image on whom the dress is to be tried-on, if the image has multiple persons in it. Another advancement included in this proposed model is a live tracking system that gives the live location of the ordered product from the time the delivery agent is out for delivery until the product is delivered to them .

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REFERENCES

[1] Andranik Tumasjan, Timm O. Sprenger, Philipp G. Sandner and Isabell M. Welpe. Predicting Elections with Twitter: What 140 Characters Reveal about Political Sentiment. In Proceedings of AAAI Conference on Weblogs and Social Media (ICWSM), 2010.

[2] Bo Pang and Lillian Lee. (2008). Opinion mining and Sentiment analysis. Foundations and Trends in Information Retrieval Vol. 2, Nos. 1–2. Pages: 1–135

[3] Stephen C. F. Chan, Cane W. K. Leung* Sentiment Analysis of Product Reviews

[4] B. Pang , L. Lee, and S. Vaithyanathan, Thumbs up?:sentiment classification using machine learning techniques, Proceedings of the ACL-02 conference on Empirical methods in natural language processing, vol.10, 2002, pp. 79-86

[5] Hitesh Parmar, Sanjay Bhandari, Glory Shah (2014, July). Sentiment mining of Movie Reviews using Random Forest with Tuned Hyperparameters. Presented at: International conference on Information Science, Kerala. [Online]

[6] Bing Liu. (2010). Sentiment Analysis and Subjectivity. Handbook of Natural Language Processing, Second Edition. (editors: N. Indurkhya and F. J. Damerau)
[7] L. Breiman, Random forests, Machine Learning, vol. 45. Issue 1, pp. 5-32G. Eason, B. Noble, and I. N. Sneddon, “On certain integrals of Lipschitz-Hankel type involving products of Bessel functions,” Phil. Trans. Roy. Soc. London, vol. A247, pp. 529–551, April 1955. (references)
[8] Apoorv Agrawal, Boyi Xie, Owen Rambow, Sentiment analysis of Twitter data. Columbia University, New York, NY 10027 USA.[Online]
[9] Mika V. Mantyla Daniel Graziotin, Miikka kuutila, The evolution of sentiment analysis, ITEE , University of Stuttgart, Finland.
[10] Dipankar Das, Souvick Ghosh and Tanmoy Chakraborty . Determining sentiment in citation text and analyzing its impact on the proposed ranking index. Jadavpur University, Kolkata. (references)