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Ecommerce Assisted by Machine Learning

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Abstract: ***E-commerce applications are growing and becoming complex day by day. Every new feature is taking the time of the user and reducing the speed or the process of purchasing anything. Consumers demand comfortability, usability, authenticity on E-commerce websites, and hence to provide with these needs Machine learning should be introduced in the E-commerce website. In this paper, we will learn various methods to help boost E-commerce using Machine Learning. Product Recommendation will severely help reduce the time of users on purchasing a product as it recommends products based on history. Cloth size estimation can be used for taking measurements for helping users purchase clothes with accurate measurements. Dynamic Pricing can be used to generate discounts and prices based on user history for maintaining users. Fake Review Prediction can be used to filter the reviews for better business. A chatbot can be used to help users during any stage of purchase or after the purchase as support. All of this can contribute towards the personalized experience of consumers and will be discussed in this paper.***
Keywords: Ecommerce, Machine Learning, Dynamic pricing, Chatbot, Product Recommendation, Cloth Size Estimation, Fake Review Prediction, Ecommerce

I. INTRODUCTION

Ecommerce has gained popularity and is considered a major way of shopping or doing business. There are some processes of Ecommerce where we can use machine learning to increase the user experience leading to increased sales and hence the growth of that Ecommerce website. The customer lacks the perks of in-store shopping like bargaining/ discounts, getting correct cloth size, seller recommending products to customers, etc. Ecommerce lacks a platform for asking questions and solving doubts of customers since the product's quality can't be verified. With the increase in purchases, there is an increase in reviews of products posted online. There is no measure of which review is fake or real. Manual review of such reviews will take a lot of time. To tackle all such problems we can introduce Machine Learning in the field of Ecommerce.

II. METHODS

Ecommerce websites should be as agile as possible and adapt to the trends in the market. In Reference [1] integration of machine learning with Ecommerce to increase the number of customers and retain them is a major task of online commerce. Investing in Machine learning is necessary for Ecommerce businesses since its exponential growth.

User feedback has played a major role in the Ecommerce industry. Problems faced by them were generally solved by FAQs or with the help of customer support, but after the ideation of chatbots, more and more Ecommerce websites started implementing it since the user gets to ask all the counts in one place itself. Reference [2] explains the different types of chatbots and it's used in different fields depending on their type. The generative chatbot is the kind that can be used in Ecommerce while the current study shows that most Ecommerce uses rule-based chatbots but it risked not giving proper support or answers to the customers and hence decreasing experience according to [3]. The generative model generates the output based on the current and previous responses from the user and suggests or generates responses from these.

Feedback can also be in the form of comments or reviews written below the product to appreciate or criticize the product. Reference [5] explains various fake review predictions and their accuracies with the effect that it has on the Ecommerce business. Reference [6] enhancing some features and getting some output from it like the number of reviews by customers, their IP, if they have purchased the products or not, etc. This method combined with [7] can be useful for creating a system to filter out spam and fake reviews. Various other hidden parameters like the sentiment of customers can be taken into consideration and can provide a more effective filter.

Marketing of the products is a necessary part of Ecommerce and it costs a lot to feature products on the website. Reference [8] describes collaborative filtering and its effect on the sales when recommended by Amazon it showed 35% in sales according to [9]. Collaborative filtering is the correlation of customers and suggesting products based on other users' purchase history. Reference [10] Content-based filtering is the type of product a consumer is buying and based on these products can be recommended.

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Reference [11] a hybrid recommender system is one that combines both collaborative and content-based filtering and then recommends the product. This is more effective since it combines both the strategies and in turn increases sales. Association rule mining and web-mining are some other techniques to recommend products. The disadvantages of this include removing original reviews or wrong predictions.

Ecommerce reduces costs in the fields of running the stores but it lacks the trust and discounts given to the regular customer of that store. To simulate such situations, discount generation/dynamic pricing plays the main role in Ecommerce using machine learning. Reference [12] tells about Markov's algorithm of a decision on different reward generation which means different discount generation. [13] Ecommerce prices can rely on the price of products on different websites and hence making the prices just lower than the competition, this strategy can increase the sales of the products. The disadvantages of dynamic pricing can be loss in revenue due to extra discounts and doubt in the authenticity of the product if sold at a much cheaper rate.

After 2020, due to the pandemic, there was an increase in the need for the purchase of clothing and all products online. For purchasing clothes online, customers generally face issues like overfitting or underfitting clothes due to different size charts of different brands. To avoid such situations Size estimator can be used to predict size using images of users and recommending appropriate cloth sizes or tailoring based on it. [14] explains the method of taking images from smartphones using calibration but it won't work properly in other smartphones so individual calibration would be required. [15] uses sensors to make 3D images and predict sizes. [16] uses a room with many sensors to get accurate measurements of the user which is more like a 3D scan of the user. This method is the most accurate but the installation of sensors and dedicated fitting rooms is a costlier method.

All these methods can contribute to the growth of Ecommerce websites and by improving these basic techniques must be a priority for modern Ecommerces. Each technique helps and has an issue with it which on getting trained on much cleaner data and proper data can prove to be a boon for the modern Ecommerce industry.

III. RESULT

Product recommendations have increased the number of orders and has effectively by using collaborative filtering. The sales show a growth of 35% for Amazon. Chatbots having LSTM show greater success rate in understanding the customer's replies or queries. Although it is accurate it is slow compared to simple RNN to some questions. The accuracies of methods used for cloth size estimation are mentioned in the (Table 1)

TABLE 1
Clothing Measuring models and it's Error while measuring

Sr. No.	Model Name	Measurement error (in cm)
1	Body Size Measurement Using a Smartphone	2.0 - 3.0
2	Im2Fit: Fast 3D Model Fitting and Anthropometrics using Single Consumer Depth Camera and Synthetic Data	1.5 - 1.9
3	In-home application (App) for 3D virtual garment fitting dressing room	0.5 - 1.0

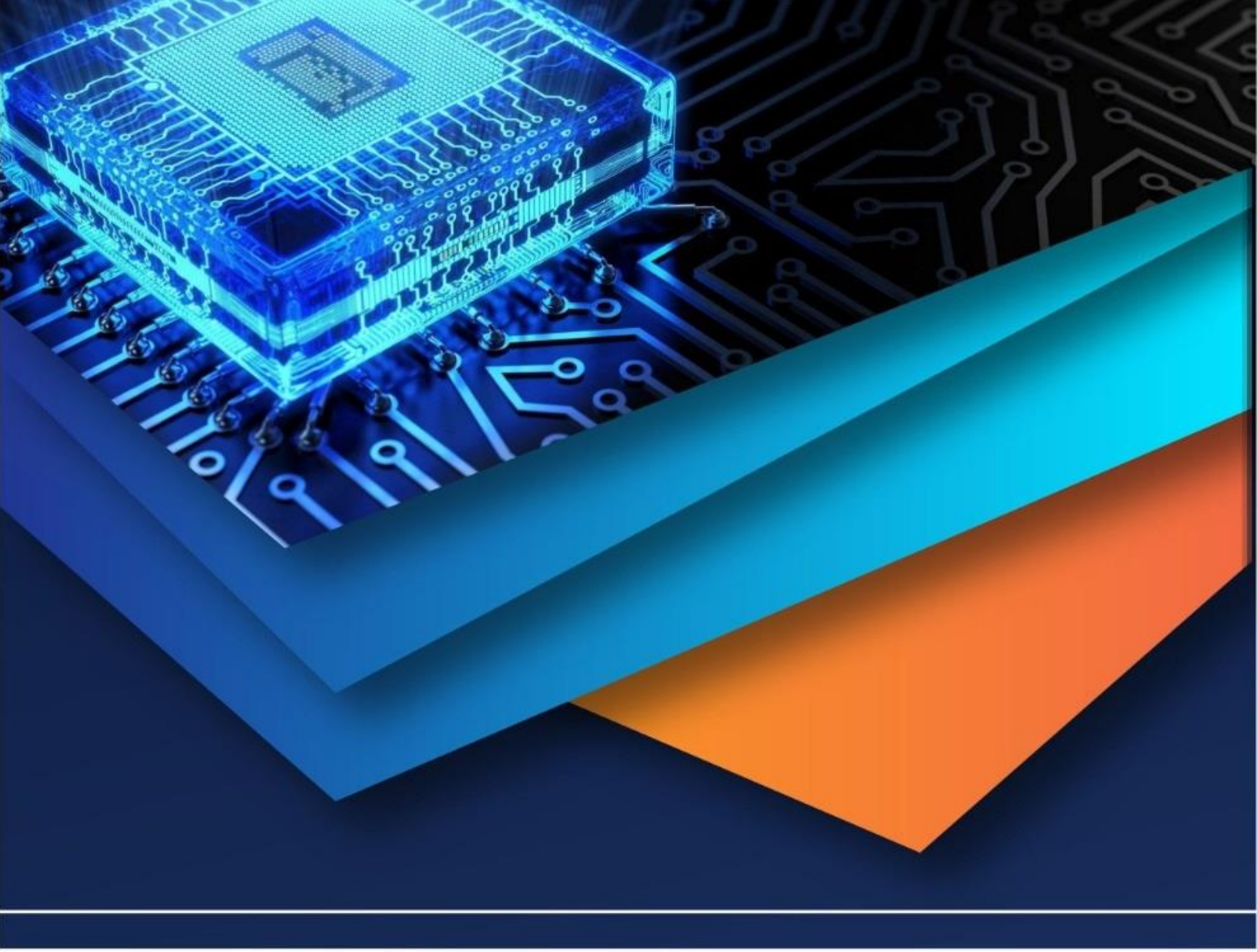
The predictions of the fake review can be implemented using models using basic principles of NLP and in turn using sentiment analysis to check the intent of the review. Correctness of the classifieds can't be completely verified and hence the deletion of it depends on the Ecommerce platform. The discounts given by dynamic pricing can only be verified based on their purchase and a sales growth will mean that the model works. Dynamic pricing works by giving discounts in a range such that the business there is a profit margin.

IV. CONCLUSION

Ecommerce websites need to be up to date with the latest trends in the markets and hence adapting with the Machine Learning methods to increase the market sales and generate revenue should be a priority. Usage of various techniques like Chatbots to get feedback and help with customer support along with fake reviews prediction to improve the products on the websites. Product Recommendation along with dynamic pricing can attract a lot of customers and retain them. Cloth size estimator can be used to get contact less shopping. All of these techniques can fairly increase the customer experience on the website and hence contribute towards the growth of Ecommerce.

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