

# Ecommerce Domain using Machine Learning

Bhavya Kharbanda<sup>1</sup> Ms.Meenu Garg<sup>2</sup>

<sup>2</sup>Assistant Professor

<sup>1,2</sup>Department of Information Technology

<sup>1,2</sup>Maharaja Agrasen Institute of Technology, Delhi, India

*Abstract*— For doing business in this communication era, web is the best medium. For business owners and consumers, online businesses broke down the barrier of time and space compared to the physical shop or office. Big companies around the world are realizing that E-commerce (EC) is not just buying and selling over Internet rather improving the competence than other giants in the market. E-Commerce has allowed businesses to offer more choices to consumers. Increasing choice, however, has also increased the amount of data and information that consumers must process before they are able to select which items meet their needs. To grow their potential markets, the big shopping platforms like Amazon, Flipkart and ebay etc. wants to utilize Machine Learning (ML) potential to build unmatched competitiveness in the market. ML has empowered businesses to analyze all queries, whether searched or abandoned, from all the users. Application of machine learning for Predictive Analytics can enhance business opportunities by analyzing customer's past click-through behaviour, purchases, preferences and history in real-time. To make fast real-time predictions from e-commerce data, the algorithm must be capable of processing huge volume of training data in reasonable time, and must be capable of handling large number of classes. So, the paper investigates the use of machine learning in E-commerce domain and its importance in predictive analysis. The need of Cloud platforms for analyzing E-commerce data is also established in this work. The paper concludes with exploration of potential areas of research in the field of E-commerce.

**Key words:** Machine Learning, E-commerce, Predictive Analytics, Classification, Natural Language Processing (NLP)

## I. INTRODUCTION

Nowadays E-commerce is considered as a standard in industry providing customers with instant access to products or services at any given time without physical barriers and provides sellers to acquire a wide range of customers locally and globally. Customers are often overwhelmed by the plethora of options available on the net and spend significant time browsing the products that they wish to purchase. Hence an intuitive design is the need of the hour for all E-Commerce websites. This can be achieved by using the concept of "Machine Learning". Machine Learning algorithms can help make sense of large amounts of data and provide actionable insights that retailers can use to make decisions later, or even in real-time. Also it helps the system make the user's experience more personalized on the basis of his needs. This paper describes an effective system that would capture and make use of the user's previous search and purchasing history so that personalized recommendations could be suggested to the user thereby making the system "intuitive". General Terms: Database,

Object oriented programming, Machine Learning As people leave on the Web their opinions on products and services they have used, it has become important to develop methods of (NLP) automatically extract the adjective and adverb.

The task of analyzing such data, collectively called customer feedback data, is known as opinion mining. Opinion mining consists of several steps, and multiple techniques have been proposed for each step. In this paper, we survey and analyze various techniques that have been developed for the key tasks of opinion mining. On the basis of our survey and analysis of the techniques, we provide an overall picture (graph and numeric value of review) of what is involved in developing a software system for opinionating. We used the NLP (Natural Language Processing) to POS and find the Adjective and Adverb. I have create the list of Adjective and adverb which all ready meaning is negate or positive.

## II. LITERATURE SURVEY

J. Ben Schafer, Joseph A. Konstan, John Riedl [1] infer that recommender systems are being used by an ever-increasing number of E-commerce sites to help consumers find products to purchase.[1] present an explanation of how recommender systems are related to some traditional database analysis techniques. Based on the examples, it creates a taxonomy of recommender systems, including the inputs required from the consumers, the additional knowledge required from the database, the ways the recommendations are presented to consumers, the technologies used to create the recommendations, and the level of personalization of the recommendations. It identifies five commonly used E-commerce recommender application models, describe several open research problems in the field of recommender systems, and examine privacy implications of recommender systems technology.

Linden, G. Smith, B. York, J. [2] have studied the recommendation system of Amazon.com and have inferred that they system uses recommendations as a targeted marketing tool in many email campaigns and on most of its Web sites' pages, including the high traffic Amazon.com homepage. Clicking on the "Your Recommendations" link leads customers to an area where they can filter their recommendations by product line and subject area, rate the recommended products, rate their previous purchases, and see why items are recommended. Shopping cart recommendations, which offer customers product suggestions based on the items in their shopping cart. Items are targeted to each customer. Amazon.com extensively uses recommendation algorithms to personalize its Web site to each customer's interests. Because existing recommendation algorithms cannot scale to amazon's tens of millions of customers and products. The algorithm, item-to-item collaborative filtering, scales to massive data sets and produces high-quality recommendations in real time.

### III. EXPECTED OUTCOME

To build a recommender system using machine learning approaches thereby making the B2C E-commerce system simple but intuitive. The data will be accumulated using variety of sources like customer ratings, previous purchases, feedback/reviews from reviewers etc. The project will

implement the three main machine learning techniques i.e. collaborative filtering, clustering and classification. The intelligent system will draw out the similarities and patterns between the users unlike the traditional approach wherein recommendations are merely given on the basis of other unrelated users.

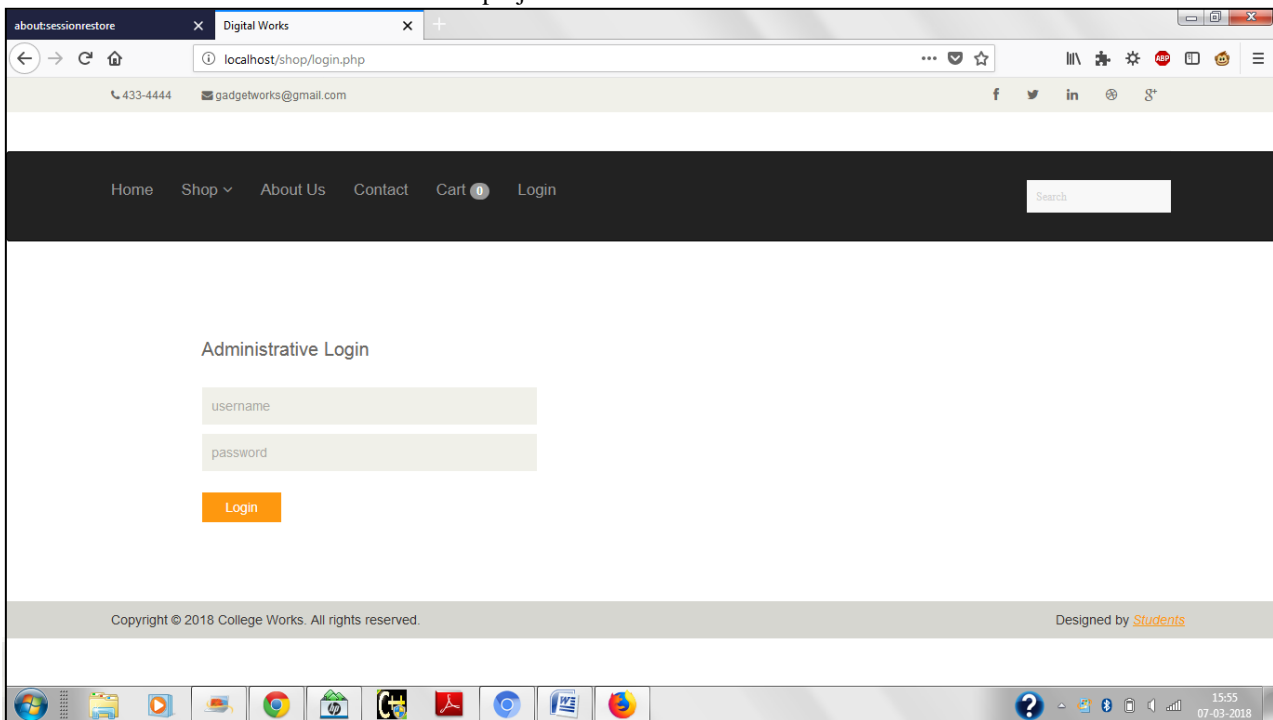


Fig. 1: Screenshot of Login Page

### IV. CONCLUSION & FUTURE DIRECTIONS

The potential areas of research in the field e-commerce include correct classification of products to improve customer experience with e-commerce website. Other potential areas are: finding abandoned customer, enhancing sale probability using recommendation systems, finding reason for customer churn, customer purchase behaviours for promotions and offers. The machine learning process isn't especially simple. To make life easier for people doing machine learning, Cloud provides several different components. Several Cloud platforms like Azure [12] Machine Learning was designed for applied Machine Learning and enables the process of creating ML models. Cloud platform uses best-in class algorithms and a simple drag-and-drop interface along with easy deployment service. In future we propose a dynamic ML model at cloud platform, for product categorization of e-commerce website.

### ACKNOWLEDGMENT

My thanks to the Ms Meenu Garg Professor Information Technology Department MAIT Delhi ,who have contributed towards development of this paper.

### REFERENCES

[1] <https://www.amazon.in/>  
 [2] Daniel Pop, "Machine Learning and Cloud Computing: Survey of Distributed and SaaS Solutions", [https://www.researchgate.net/publication/257068169\\_](https://www.researchgate.net/publication/257068169_)

Machine\_Learning\_and\_Cloud\_Computing\_Survey\_of\_Distributed\_and\_SaaS\_Solutions  
 [3] [https://en.wikipedia.org/wiki/Machine\\_learning](https://en.wikipedia.org/wiki/Machine_learning)  
 [4] <https://en.wikipedia.org/wiki/PHP>  
 [5] [https://www.researchgate.net/publication/264129339\\_Big\\_Data\\_Analytics\\_and\\_its\\_Application\\_in\\_E-Commerce](https://www.researchgate.net/publication/264129339_Big_Data_Analytics_and_its_Application_in_E-Commerce)  
 [6] Sushant Shankar and Irving Lin, "Applying Machine Learning to Product Categorization"  
 [7] Gunasekaran A et al. E-commerce and its impact on operations management. International journal of production economics. 2002; 75(1):185-197  
 [8] J. BEN SCHAFER, JOSEPH A. KONSTAN, JOHN RIEDL, "E-Commerce Recommendation Applications", Data Mining and Knowledge Discovery, 5, 115-153, 2001, Kluwer Academic Publishers, Netherlands.  
 [9] Linqi Song, CemTekin, Mihaela van der Schaar, Online Learning in Large-scale Contextual Recommender Systems, IEEE, 2014.  
 [10] Lee, Matthew KO, Efraim Turban. A trust mode l for consumer internet shopping. International Journal of electronic commerce. 2001; 6(1):75-91  
 [11] Hu, M., and Liu, B. 2004. Mining Opinion Features in Customer Reviews. In Proceedings of Nineteenth National Conference on Artificial Intelligence (San Jose, California, USA, July 2-29, 2004). The AAAI Press, Menlo Park, CA,755-760.  
 [12] Yi, J. and Niblack, W. 2005. Sentiment Mining in Web Fountain. In Proceedings of the 21st international Conference on Data Engineering (Icdede'05) - Volume

- 00(April 05 - 08, 2005). ICDE. IEEE Computer Society, Washington, DC, 1073-1083.
- [13] Esuli, A. and Sebastiani, F. 2006. SentiWordNet: A Publicly Available Lexical Resource for Opinion Mining. In Proceedings of Fifth Conference on Language Resources and Evaluation (Genova, Italy, May 22-28, 2006). 417-422.
- [14] Dave, K., Lawrence, S., and Pennock, D. M. 2003. Mining the peanut gallery: opinion extraction and semantic classification of product reviews. In Proceedings of the 12th international Conference on World Wide Web (Budapest, Hungary, May 20 - 24, 2003). WWW '03. ACM, New York, NY, 519-528.
- [15] Gunasekaran A et al. E-commerce and its impact on operations management. International journal of production economics. 2002; 75(1):185-197.

