



Product Review And Rating Analysis

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Abstract: Ecommerce has become an integral part of people's lives. In today's digital world most of the consumers prefer e-commerce. It is now also a common practice to post reviews about a product, be it positive or negative. Recommender systems are a tool to cope with the challenge of increasing diversity of user's demands, through product recommendation it is possible to fulfill customers' needs and expectations, helping maintaining loyal customers while attracting new customers. User-generated content includes reviews and ratings which gives important information regarding the customer-perceived quality of online products and services. Recommender system is a crucial technique to seek out the knowledge that the users could also be inquisitive about their feedbacks. In this paper a product recommendation system that uses content-based filtering is proposed to surpass the difficulties.

Index Terms - Recommender systems, Content-based recommendation, Cosine similarity, TRI, TF-IDF

I. INTRODUCTION

In today's digital world, most of the shoppers like ecommerce, thanks to the profitable offers, however primarily as a result of they need a review and feedback system to gauge the merchandise. It is conjointly currently a standard apply amongst customers to post reviews a couple of products they purchase, be it positive or negative. Such reviews provide valuable feedback on these products, which may further be used by potential customers to find opinions of existing users before deciding to purchase a product. They are additionally utilized by product makers to spot strengths and issues in their merchandise and to seek out competitive intelligence, like its potential value within the market. It makes them susceptible to change based on customer feedback such as a product with a positive feedback results in high sales which in turn result in a lesser discount so as to enhance sales.

II. LITERATURE SURVEY

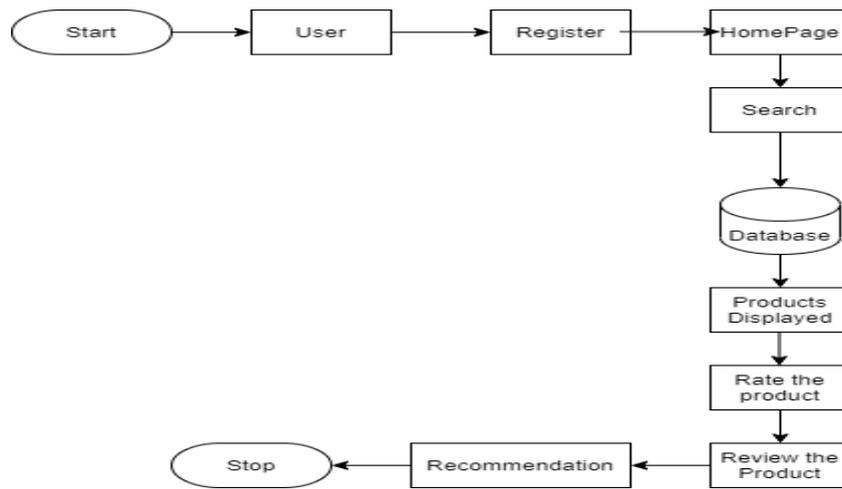
In this paper they have implemented the weighting of Term Frequency - Inverse Document Frequency (TF-IDF) method and Cosine Similarity with the concept of measuring degree of similarity terms in a document. They carried a number of trials on Indonesian text-based documents that have undergone the stage of data pre-processing for extraction purposes. This process gives the rank of a document based on closeness match level with expert's document.[1]

In this paper it has been proposed that a deep interactive architecture is useful to learn the text-rating interaction (TRI) for helpfulness modeling. TRI expands the capacity of representation of star ratings and amplifies the influence of rating information on review texts. It maps reviews and ratings into feature vectors of the same dimensionality.[2]

In this paper they discuss that content-based recommendation systems analyze item descriptions to identify items that are of particular interest to the user. Because the details of recommendation systems differ based on the representation of items, they first discuss alternative item representations. In the later part, the recommendation algorithms suitable for different representations are discussed. They have concluded the chapter giving an overview of the variants of the approaches, along with the strengths and the weaknesses of content-based recommendation systems, providing directions for future research and development.[3]

III. PROPOSED TECHNIQUE

Figure 1: Proposed Technique

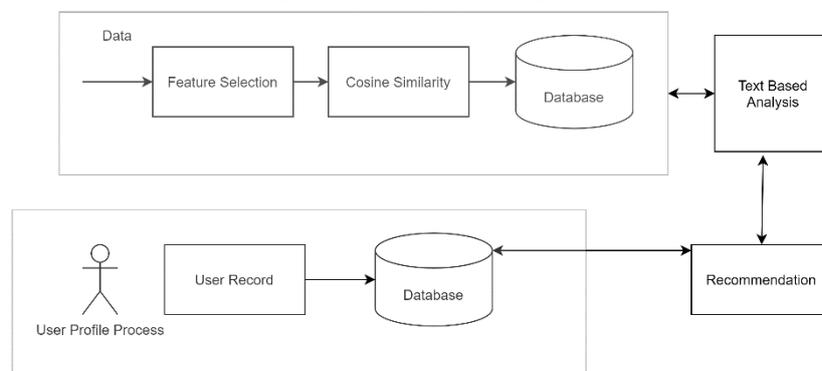


In our proposed system, we are developing a website which would be useful to consumers in deciding what they can buy. In our application, we would update the database with a number of electronic products. And then we propose a system for recommendation of products with least probability of repetition of the products as we have a huge amount of data set of products. The proposed system helps us to save time in deciding what to buy by viewing the reviews and ratings given by other users on the products. Collaborative Filtering helps in recommending similar products based on the product type.

IV. SYSTEM FLOW

There is a separate sign up or login section. In order to view or rate a product the user will be prompted to login or register. The password is encoded using hexdigits in the database. They can change their password by clicking on their profile and selecting the change password option. After logging in each user can navigate through the website where they can view various products and rate and put a review about the same. The user can also get well acquainted of their rights and responsibilities as a consumer. By default, the user will be navigated to home page once the user successfully login into the system. Logout functionality is provided to end the on-going session. Figure 2 represents the use case for system flow.

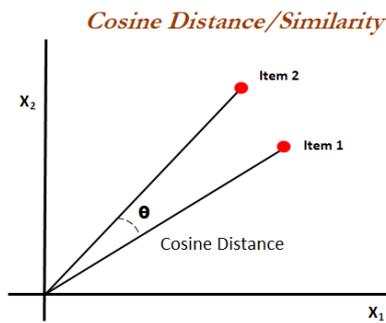
Figure 2: Architecture Diagram



The Feature Selection parameter in the project is the product description stored the database. A .csv file read through by Python's Pandas library. Scikit Learn's CountVectorizer function is used to convert a collection of text to a vector of token counts. Cosine Similarity is used as a metric of the similarity matrix. The text based analyzer basically parses through the database for similar words and recommends those products.

V. COSINE SIMILARITY

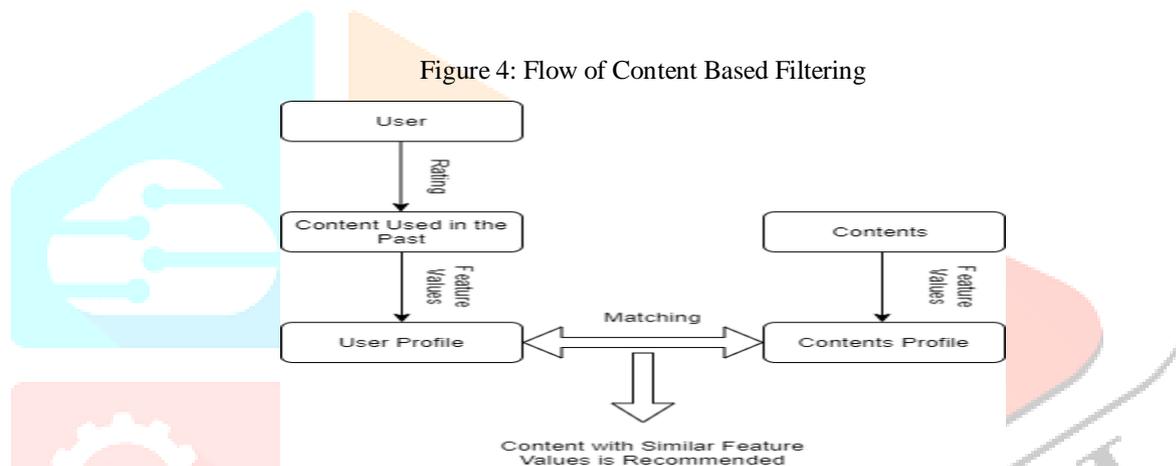
Figure 3: Flow of semantic search analysis



Recommendation Systems work based on the similarity between the user preferences or the user's profiles. Cosine similarity is a metric used to measure how similar two items are, which measures the cosine of the angle between two vectors projected in a multi-dimensional space. The output value ranges from 0–1. No similarity is indicated by a 0, where as 100% similarity is indicated by a 1. The less is the angle between the two vectors, the more is the similarity between them. The idea is to recommend the products with the highest similarity to the ones already viewed by the user.

VI. CONTENT BASED FILTERING

Figure 4: Flow of Content Based Filtering



Content-based recommenders take into account the interest of the user by comparing the description of the item or a product to the description of the content corresponding to the user's area of interest. Content-based filtering uses item features to recommend other items almost like what the user likes, supported by their previous actions or explicit feedback. The engine becomes more and more accurate as the user provides more inputs or takes actions on the recommendations. The idea in content-based filtering is to tag products using certain keywords, understand what the user likes, search for those keywords in the database and recommend different products with the similar attributes.

VII. RESULTS

Product Review and Rating Analysis system is successfully developed. The system developed is used to help consumers in their decision of buying products through review and rating mechanism along with collaborative filtering. Review and rating-based system using collaborative filtering helps in aptly determining the consumers interest thereby helping them in making an efficient choice while deciding an item to purchase.

Product Rating and Review Analysis

Sign In

Shop by Category: Smartphones Headphones Laptops SmartWatches SmartHome

Search for Products

Type for recommendations

Products

Apple iPhone XS Max  Rs 63000.0	Apple iPhone 11  Rs 51000.0	goPro  Rs 5000.0	JBL Bluetooth Speakers  Rs 3000.0	Bose Headphones  Rs 3500.0	One Plus 7 Pro  Rs 65000.0	Samsung Galaxy Note 10  Rs 36000.0
Microsoft Surface Laptop 3 	Dell G7 	Acer Predator 	Redmi Note 9 Pro 	Acer Aspire 5 	Amazefit GTS 	Amazon Alexa 

Hello, Aditi

Apple iphone 11



Details
 Name Apple iphone 11
 Price Rs 100000.0
 Stock 5

Description
 6.5-inch Super Retina XDR OLED display Water and dust resistant Triple-camera system with 12MP Ultra wide, wide, and telephoto cameras; night mode, Portrait mode, and 4K video up to 60fps

Reviews
 Extremely happy with the phone, got exactly what I was looking for ! , 4.0
 — From @Aditi

Your Rating
 ★★★★★

Your name

Your review

VIII. CONCLUSION

Proposed a Product Review and Rating System which is fast, streamlined, randomized and secure. Every task performed by this system is automated so that storage space, bias, and security is not concern anymore. The proposed system is very helpful for many consumers. In the future, more advanced concepts will be explored for improving the efficiency of the project. Also consider improving the current recommendation method though more advanced applications.

REFERENCES

- [1] Noor Akhmad Setiawan, Alfirna Rizqi Lahitani & Adhistya Erna Permanasari, "Cosine similarity to determine similarity measure: Study case in online essay assessment", IEEE Xplore, 2016.
- [2] Jianhua Du, Liping Zheng, Jianto He, Jia Rong, Hua Wang & Yanchun Zhang, "An Interactive Network for End-to-End Review Helpfulness Modelling", Springer OpenAccess, 2020.
- [3] Michael J. Pazzani and Daniel Billsus, "Content-Based Recommendation Systems", SpringerLink, 2007.
- [4] Silvana Aciar, Debbie Zhang, Simeon Simoff & John Debenham, "Informed Recommender: Basing Recommendations on Consumer Product Reviews", IEEE, 2007.
- [5] Gediminas Adomavicius & YoungOk Kwon, "New Recommendation Techniques for Multicriteria Rating Systems", IEEE, 2007.
- [6] Marko Balabanović, Yoav Shoham, "Content-based, collaborative recommendation", ACM Digital, 1997.
- [7] Linas Baltrunas, Bernd Ludwig, Stefan Peer & Francesco Ricci, "Context relevance assessment and exploitation in mobile recommender systems", Springer, 2012