E-Commerce Recommendation System Using Machine Learning

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Abstract- *A product price comparison website is a platform that enables users to compare prices of products across multiple vendors and find the best available deals. Such websites use web scraping techniques to collect data from various vendors and provide a comprehensive list of products with their prices, specifications, and reviews. To improve the accuracy of the data, machine learning algorithms such as SVM can be used for classification, regression, optimization, and outlier detection. The development of a product price comparison website involves various modules, including data scraping, data cleaning, machine learning, and user interface design. The website must be designed with a user-friendly interface that provides relevant information to the user and allows them to easily navigate the platform.*

Overall, a product price comparison website can provide significant benefits to consumers by saving time and money while also promoting competition among vendors. With the increasing popularity of e-commerce, the demand for such websites is likely to grow, making it an exciting area for research and development.

Keywords- product prize comparison, products, dataset, Support vector machine.

I. INTRODUCTION

A product price comparison website is a platform that allows consumers to search and compare prices of products across different brands and retailers. These websites are designed to provide consumers with a comprehensive and unbiased comparison of products that meet their needs and budget. The primary objective of a product price comparison website is to help consumers save time and money by providing them with valuable information that assists them in making informed purchasing decisions. These websites offer a user-friendly interface that allows users to search for products based on various criteria such as price, brand, model, and features. Product price comparison websites leverage technology such as web scraping and machine learning algorithms to extract and analyze data from various e-commerce websites. This allows them to provide users with accurate and up-to-date pricing information for products

across different retailers. it is observed that a huge number of people depend on purchasing different items websites instead than actual businesses. Owners of websites purposefully list prices that differ from their true costs in an effort to capitalize on consumer demand. Therefore, consumers who are unaware of the upfront actual costs of such products are wasting money by making purchases. As a result, consumers are duped into spending more money than necessary to purchase goods. The significance of the price comparison tool is undeniable, to summaries the aforementioned fact. Predict the product price and its comparison by using the SVM algorithm. websites use web scraping techniques to collect data from various vendors and provide users with a comparison of prices and product features. To improve the accuracy of the data, machine learning algorithms such as SVM can be used for classification, regression, optimization, and outlier detection. The development of a product price comparison website involves various modules, including data scraping, data cleaning, machine learning, and user interface design. The website must be designed with a user-friendly interface that provides relevant information to the user and allows them to easily navigate the platform. a product price comparison website can provide significant benefits to consumers by saving time and money while also promoting competition among vendors. The importance of such websites is likely to grow with the increasing popularity of e-commerce, making it an exciting area for research and development.

Overall, product price comparison websites are an essential tool for consumers who are looking to make informed purchasing decisions. They provide a convenient and efficient way to compare products and find the best deals, saving consumers time and money.

II. A.PROBLEM DEFINITION

Price comparison sites collect information about the prices of products on different websites, display this information, and thus allow consumers to select a store to purchase based on price. Of course, there are many other features and technologies, so making such a site may help people find products at the lowest price. Before the development of product price comparison websites, consumers

faced several problems when it came to purchasing products online. These problems included time consuming, limited information, lack of transparency, prizes are according to the companies only, users are finding it difficult to find the best deal.

The problem definition of a product price comparison website is to create a platform that allows users to compare the prices of products across multiple vendors and find the best available deals. The main objective of the website is to provide consumers with a comprehensive list of products with their prices, specifications, and reviews, thus helping them make informed purchasing decisions.

The problem definition of a product price comparison website involves several challenges, including:

Data Collection: The website needs to collect data from various vendors to provide users with a comprehensive list of products with their prices, specifications, and reviews. This requires web scraping techniques to collect data from different websites, which can be a challenging task.

Data Cleaning: The collected data needs to be cleaned and structured to remove duplicates, irrelevant information, and inconsistencies. This involves the use of various data cleaning techniques to ensure the accuracy and quality of the data.

Machine Learning: Machine learning algorithms such as SVM can be used to improve the accuracy of the data by classifying, regression, optimization, and outlier detection. This requires the development of a machine learning model that can be trained on the collected data.

User Interface Design: The website must be designed with a user-friendly interface that provides relevant information to the user and allows them to easily navigate the platform. This involves the design of a user interface that is easy to use and provides relevant information to the user

III. OBJECTIVES

Providing a comprehensive list of products: The primary objective of a product price comparison website is to provide consumers with a comprehensive list of products with their prices, specifications, and reviews.

Helping consumers make informed decisions: By providing relevant information about products, a product price comparison website can help consumers make informed purchasing decisions.

Saving time and money: A product price comparison website can save consumers time and money by providing them with a list of products with their prices and deals, allowing them to compare and choose the best available option.

Promoting competition among vendors: By providing consumers with a comprehensive list of products with their prices, a product price comparison website can promote competition among vendors, leading to better deals and transparent pricing.

Improving customer satisfaction: A product price comparison website can improve customer satisfaction by providing a user-friendly interface that allows consumers to easily navigate the platform and find the products they are looking for.

Offer a user-friendly platform: We aim to provide a user-friendly platform that is easy to navigate and use. Our website is designed to be accessible to all users, regardless of their technical expertise

Provide transparency: We aim to be transparent about how we collect and analyze data to provide our users with accurate and up-to-date information. We believe that transparency is essential to building trust with our users.

Provide unbiased information: We strive to provide unbiased information about products and prices. Our comparison website is designed to offer a fair and objective analysis of products to help consumers make informed decisions.

IV. LITERATURE SURVEY

"Product price comparison websites: a review and a new research agenda" by E. Buettner, G. Franke, and L. Menkhoff. This paper reviews the literature on product price comparison websites and proposes a new research agenda for future studies. The authors discuss the impact of product price comparison websites on consumer behavior, competition among vendors, and market structure.

"Price comparison websites: a survey" by G. Prasad and S. Kulkarni. This paper provides a survey of the existing product price comparison websites and compares their features, functionality, and user interface design. The authors discuss the challenges of web scraping, data cleaning, and machine learning in the development of product price comparison websites. Price Comparison Websites" by C. van Noort, M. Antheunis, and E. Fennis. This paper examines the factors that influence consumer decision making in product

price comparison websites. The authors use a survey method to gather data from consumers and analyze the impact of product features, website design, and vendor reputation on consumer decision making.

"Competing for Attention in Online Markets: An Empirical Study of Online Product Price Comparison Services" by T. Hess, C. Benlian, and M. Matt. This paper analyzes the competition among product price comparison websites and the factors that influence their success. The authors use an empirical study to examine the impact of website features, vendor reputation, and market structure on consumer behavior. "A Comparative Study of E-Commerce Product Price Comparison Websites" by S. S. S. N. Naidu and K. R. N. Rao: This paper compares the features and functionalities of popular e-commerce product price comparison websites and evaluates their effectiveness in helping consumers make informed purchasing decisions.

"Price Comparison Websites: A Review of the Literature" by M. M. A. Hossain et al.: This paper provides a comprehensive review of the literature on price comparison websites and discusses their impact on consumer behavior and market competition.
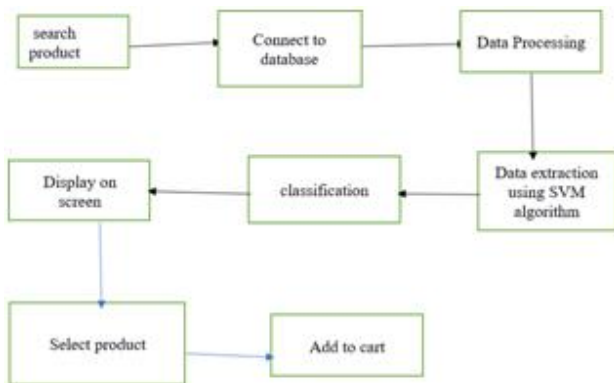
V. PROPOSED METHODOLOGY

Figure 1: Representation of how the system will work

- Data collection: The first step in the model involves collecting data from user about the product like when they search in the category or can be search in the product, when the user click on certain product then system will add it to basket and compare the prizes.
- Preprocessing: The collected data is then preprocessed to remove noise and irrelevant data, and to normalize the data for consistency. Preprocessing also involves feature extraction, where relevant features are extracted from the data.

- Data extraction: The preprocessed data is then used to extract the data from the system. This extracted data later will be provided to the user interface that means to the front end of system so that it will display it on the screen.
- display products from different companies: after extraction of data from the database it displays products on the screen, the displayed products are compared in prizes according to the three different companies. It compares the prizes of product from three different companies and display it on the screen.,
- Add to basket: when the products are displayed then user will choose the product and it to basket. In basket there is also a column according to companies or products and the prizes are listed in that columns by their companies so that the user can choose from where they can buy the products that they chose.

VI. CONCLUSION

In conclusion, a product price comparison website is a useful tool for consumers to find the best deals on products. By providing a platform that compares prices from different vendors, users can save time and money by quickly finding the best available deals. The implementation of such a website involves various modules, including web scraping, data cleaning, machine learning algorithms, and user interface design. Machine learning algorithms, such as SVM, can be used to classify products, predict prices, optimize searches, and handle noisy data.

overall, a product price comparison website can provide significant benefits to both consumers and businesses by facilitating the discovery of the best deals and promoting competition among vendors.

VII. RESULT
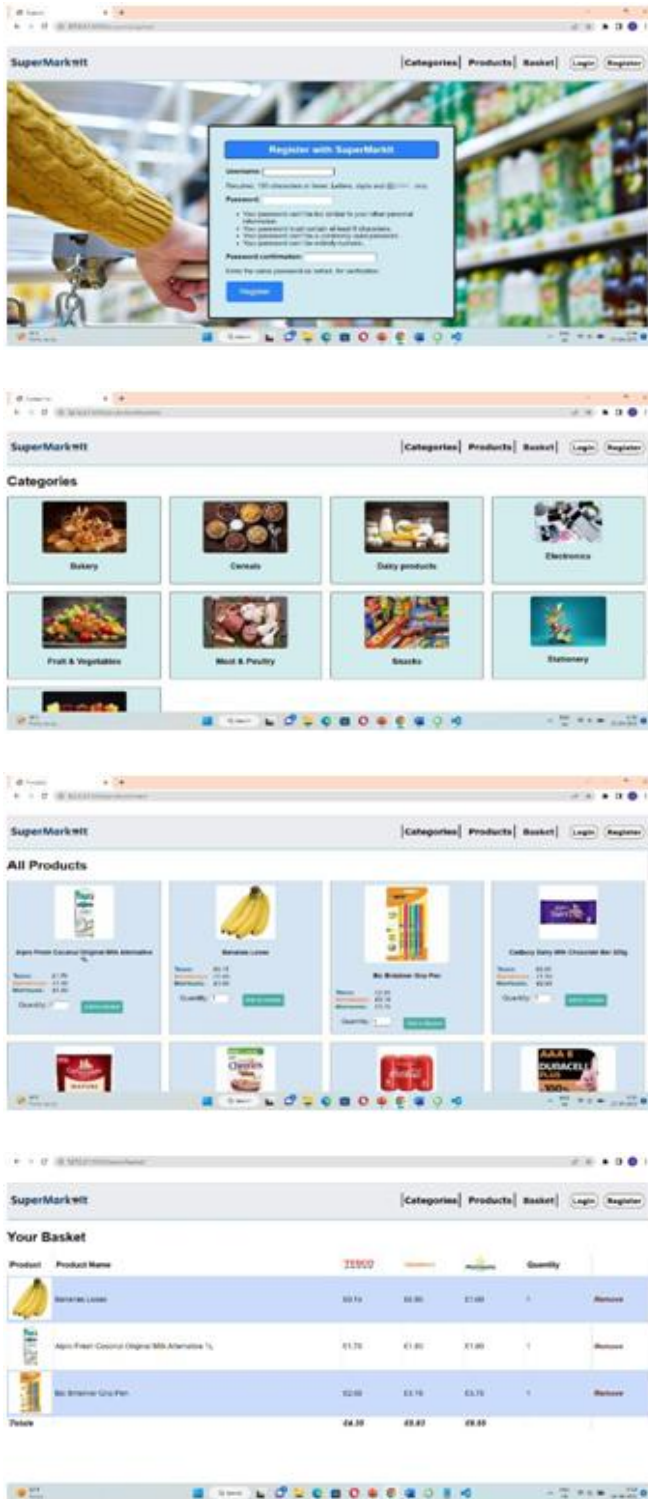
The above images are the screenshots of the website of E- commerce recommendation system using machine learning project. The fig. 1 shows the idea of how the project is working on the developer side, it shows the flow of data in the system. But the above screenshots are from actual system's user interface (UI). The user interface developed in the system is very friendly as well as easy to use. The first screenshot is the homepage of system, the page displayed on the screen as soon as we open the website. It has buttons on it named categories, Product, basket and login and register. The second screenshot is the screenshot of registration page, from this page the user will register into the system by giving the valid information according to the instruction mentioned there. After registration there is image of login page. After registering into the system, the user will login to the system to view products. After this there is image of categories page which shows you the categories of products which are there in the system. And the last one is the image of products page which displays all the products available in the system in one single page. The last image is the screenshot of basket, where there are the products included by user according to their choice. In basket there are three columns which shows the prizes according to companies named Tesco, Sainsbury's, Morrisons. Here user will decide from which website he wants to buy the products.

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