

Intelligent Price Comparitor

**Mr. M.V.Ramana¹, Boddu Rathna Sri², Angara Anusha³,
Chellaboina Lakshmi Durga⁴, Lavudu Durga Ramesh⁵, Makana Suresh⁶**

¹Associate Professor, CSE Department, V S M College Of Engineering, Ramachandrapuram, Dr. B.R. Ambhedkar Konaseema Dt, Andhra Pradesh-533255

^{2,3,4,5,6}Students, CSE Department, V S M College Of Engineering, Ramachandrapuram, Dr. B.R. Ambhedkar Konaseema Dt, Andhra Pradesh-533255

ABSTRACT

In the fast-evolving digital market place, consumers frequently face the challenge of finding the best deals on products across various e-commerce platforms. This project, titled "Intelligent Price Comparator," addresses this challenge by developing a web application that allows users to enter the name of a product using user interface and fetch prices from both Flip kart and Amazon websites. The primary objective is to provide consumers with a comprehensive comparison of prices and reviews, thereby identifying the optimal purchasing options. Key features of the application include a user-friendly web interface to enter the product name and fetch prices, scraping prices from both Flip kart and Amazon, and displaying the fetched prices on the web page. The application also analyses customer reviews of the product and suggests the best website to buy that product based on both price and reviews. The findings demonstrate that intelligent price comparison can significantly aid consumers in making more informed purchasing decisions ,saving both time and money. The implications of this work extend to enhancing the e-commerce experience by promoting transparency and empowering consumers with the information necessary to make smarter choices.

Keywords: Product comparison, Recommendation, Web scraping, Relevance, Machine learning, Price, E- commerce websites.

INTRODUCTION

The popularity of product comparison websites has grown in recent years as buyers try to make wise choices crowded and complicated market. Users of these websites can compare Products based on a variety of criteria, such as features, price, and quality. Presenting this information to users effectively is becoming more difficult, though, as the quantity of products and information available online keeps increasing. We will examine product comparison websites in this research paper and how machine learning can be used to enhance the user experience. In particular, we'll look at how machine learning can improve product comparison engines' usability, aesthetic appeal, and degree of recommendation accuracy. Through our study, we intend to shed light on the possible influence of machine learning on the evolution of product comparison websites. We'll start by giving a summary of the state of product comparison websites today, and then we'll go over pertinent machine learning literature. After that, we'll go over our approach to integrating machine learning into our current product comparison engine and talk about the

results. In the end, we want to show how machine learning can enhance the user experience on websites that compare other products.

EXISTINGSYSTEM

There exists a variety of intelligent systems dedicated to online price comparison, thereby simplifying shopping decisions for consumers. For example, Pricee.com and Xuper Mall specialize in the Indian e-commerce market, offering price comparisons, cash back deals, and alerts. On a broader scale, tools such as Google Shopping and Price Grabber gather prices, filter options, and provide detailed product insights. The Shop Savvy app, it is crucial to mention, scans barcodes to instantly compare prices, integrating the online and in-store shopping experiences. These systems aim to make shopping more cost-effective and convenient for users. In conclusion, these systems play a pivotal role in the dynamic online shopping landscape.

PROBLEM STATEMENT

Now-a-days there increased a lot of sources for online shopping. It is difficult for consumers to make well-informed decisions about what to buy. In the era of e-commerce, where a vast array of products is offered by numerous online retailers, this is particularly true. Customers frequently spend a great deal of time investigating and contrasting products on various websites as a result, which can be confusing and time-consuming. In order to help customers make quick and simple decisions, a product comparison website offers a one-stop platform where they can compare features, costs, and reviews of different products from different websites where that product exists.

PROPOSEDSYSTEM

The proposed system is a flask-based web application that allows users to input the name of the product they wish to purchase. The system features a user-friendly interface and the back end of the application is built using Python with the Flask framework. Web scraping is carried out using Beautiful Soup and Selenium, powered by the Chrome Web Driver in order to fetch prices from the E-commerce site. Additionally, the project employs Machine learning algorithms to analyse and review products, enhancing the accuracy and relevance of the recommendations provided. HTML and CSS for frontend for the User Interface and after analyzing the product over various websites the best website is being recommended to the user for purchasing that product.

IMPLEMENTED ALGORITHMS

Web Scrapping:

Web scraping is a method for automatically extracting data from websites, In this project this is mainly used to extract price details of the product from various websites. To access web pages, retrieve particular data, and save it in a structured format like CSV or JSON, scripts or tools must be written. Libraries like Beautiful Soup, Scrapy, or Selenium, which enable HTML parsing and navigation through dynamic web elements, can be used for web scraping. Numerous domains, including price comparison, market research, and data analytics, make extensive use of it. However, using web scraping techniques requires careful attention to ethical and legal issues, such as following website terms of service and refraining from making excessive requests.

Sentiment Analysis:

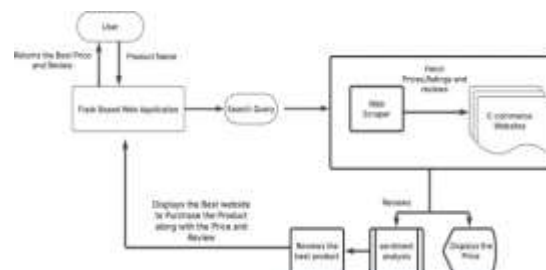
Sentiment analysis for natural language processing (NLP) tasks.. It simplifies natural language analysis by providing tools to calculate the polarity and subjectivity of text. Polarity ranges from -1 to 1, where -1 indicates negative sentiment,

1 indicates positive sentiment, and 0 represents neutrality. Subjectivity, on the other hand, measures how opinionated or factual the text is, ranging from 0 (objective) to 1 (subjective). Text Blob uses a lexicon-based approach, relying on predefined sets of words with associated sentiment values. This makes it easy to analyze text data, such as customer reviews or social media posts, to understand public opinion or trends. It's a user-friendly tool for beginners and experts like in sentiment analysis projects.

WORKING OF MACHINE LEARNING ALGORITHMS

The development of intelligent price comparators relies heavily on machine learning algorithms, which allow for remarkably accurate price analysis and prediction. To start, the process starts with data preprocessing, which involves cleaning and standardizing raw data from various online sources to get rid of mistakes, missing values, and inconsistencies. Feature engineering comes next, which pulls out important Characteristics like product categories, brand, price, ratings, and reviews. The basis for further analysis and forecasts is these characteristics. Subsequently, supervised learning algorithms, such as Decision Trees and Linear Regression, are used for tasks like using historical data to predict future prices and classifying products for better organization. In the meantime, unsupervised learning models—such as K- Means clustering—are used to identify trends and classify comparable goods or pricing patterns across various platforms. The comparators' capacity to offer accurate and pertinent pricing recommendations is improved when these techniques are combined.

SYSTEM ARCHITECTURE



The Entire intelligent Price comparator system is built on a modular architecture consisting of three main layers: Frontend User Interface Module, Web scraping Module and Sentiment Analysis Module, Output Module.

Frontend Module: This module is the user-facing part of the system, responsible for creating a visually appealing and intuitive interface. HTML and CSS are used to design input forms where users can enter the product name they want analyzed. It ensures responsiveness so that the application functions smoothly on various devices. User interaction is paramount here, as it's the tone for the overall experience. Incorporating JavaScript can further enhance functionality, like validating user input or displaying dynamic feedback.

Web Scraping Module: Using tools like BeautifulSoup and Selenium, this module collects data from multiple e-commerce platforms. It extracts information such as product prices, descriptions, and customer reviews while navigating through web pages. A request is used to establish HTTP connections for fetching web pages. The module must handle dynamic content and consider ethical guidelines, including adhering to robots. Txt files and site policies, to avoid legal issues while scraping.

Sentiment Analysis Module: Text Blob is at the heart of this module, analyzing customer reviews to determine sentiment. It computes polarity (ranging from -1 for negative to 1 for positive sentiment) and subjectivity (ranging from 0 for objective to 1 for subjective content). This analysis helps gauge overall customer satisfaction and product quality. Combined with preprocessing techniques like cleaning and tokenizing text, the module ensures accurate sentiment scores for better decision-making.

Output Module:

The output module integrates data from web scraping and sentiment analysis to recommend the best purchase option for users. It consolidates pricing details, sentiment scores, and product reviews to present concise and actionable insights. The goal is to make decision-making effortless by displaying the results in a clear and user-friendly manner.

RESULT ANALYSIS

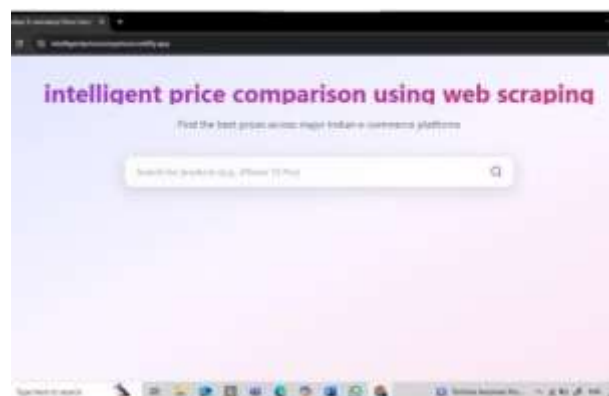


Fig-1: Home page

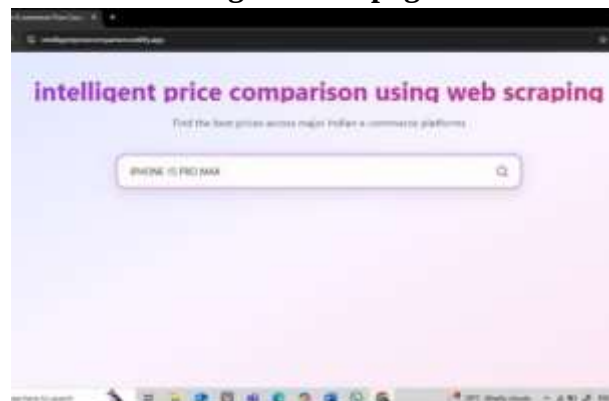


Fig-2: Enter the Input

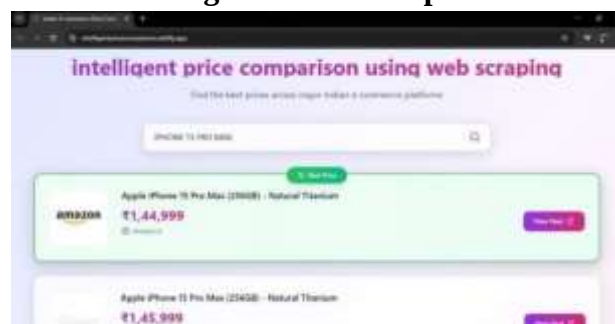


Fig-3: Output Results

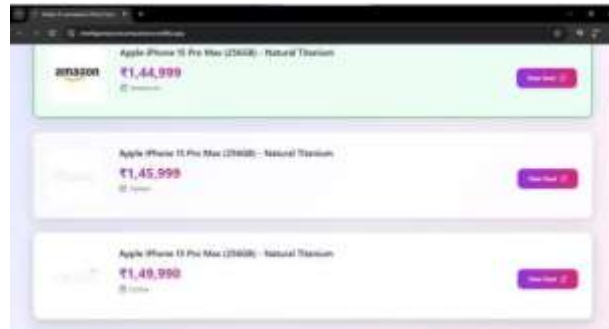


Fig-4: Output Results



Fig-5:View Deal

CONCLUSION

In conclusion, developing a machine learning (ML)-based product compares on website with relevance and recommendation capabilities is a difficult under taking that calls for knowledge of a variety of programming languages and technological platforms. For this project, we used Python, Rust, Mongo DB, and Java Script to create a website that can give users relevant and accurate product comparisons and suggestions based on their preferences. ML algorithms were used to implement the website's relevance and recommendation features, which exam in end user behavior and preferences to offer tail or edsuggestions. Through the use of machine learning(ML) technology ,the website has been able to learn from user interactions and feedback, becoming more accurate and effective overtime. Over all, this project show powerful and promising machine learning is for creating tailored and intelligent web sites that improve user experience and give businesses insightful information. Future advancements in website recommendations and relevance should be even more pronounced as more data becomes accessible and more sophisticated machine learning algorithms are created.

REFERENCES

1. iang, L., Wu, Z., Zheng, Q., & Liu, J. (2009, September). Learning deep web crawlingwithdiversefeatures. In 2009 IEEE/WIC/ACM International Joint Conference on Web Intelligence and Intelligent Agent Technology (Vol. 1, pp.572-575).IEEEM.Young,The Technical Writer's Handbook. Mill Valley, CA: University Science, 1989.
2. Philip,S.,Shola,P.,&Ovy,A.(2014). Application of content-based approach in research paper recommendation system for a digital library. International Journal of Advanced Computer Science and Applications, 5(10).
3. Shamrat,F.J.M.,Tasnim,Z.,Rahman, S., Nobel, N. I., & Hossain, S. A. (2020).An effective implementation of web crawling technology to retrieve data from the world wide web(WWW). International Journal of Scientific & TechnologyResearch,9(01),1252-1256.
4. Mr. Santosh Kumar Mishra, Mukul Singhal, Dikshant Awasthi, Parshvi Verma,Sumit Kumar Malik," Predict the relevance of search results from Ecommerce sites", 29 June 2020.
5. Javed, U., Shaukat, K., A. Hameed, I., Iqbal,F.,MahboobAlam,T.&Luo,S. (2021). A Review of Content-Based and Context-Based Recommendation Systems. International Journal of Emerging Technologies in Learning (IJET),16(3),274-306.Kassel, Germany: International Journal of Emerging Technology in Learning. Retrieved April 14, 2023.