iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** V **Month of publication:** May 2023

DOI: https://doi.org/10.22214/ijraset.2023.52750

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue V May 2023- Available at www.ijraset.com

E-Commerce Website using Image Segmentation

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Abstract: ***Image mining is a critical research space in recent times that focuses on the supply of facts in records. this is in which records from the internet site is mined so that informative facts can be processed and used correctly and correctly through people. Image segmentation has gained popularity in recent years due to its usefulness in improving the quality and efficiency of various computer vision applications, particularly in e-commerce websites. The paper provides a summary of the relevant literature, introduction associated with implementing this technology. The reviewed studies suggest that e- commerce websites with image segmentation technology have higher conversion rates, lower bounce rates, and increased customer satisfaction compared to those without.***

Keywords: E-commerce, Segmentation, Filtering, Technology, Images, User

I. INTRODUCTION

An e-commerce website using image segmentation is a cutting-edge solution that combines the power of e-commerce and computer vision techniques to enhance the online shopping experience. By leveraging image segmentation algorithms, this website allows for the extraction and analysis of objects within product images, enabling various advanced functionalities and visual enhancements. In traditional e-commerce platforms, product images are typically displayed as a whole, without any detailed analysis of the objects or regions within the image. However, with the integration of image segmentation techniques, the e-commerce website can go beyond traditional product display, offering a more immersive and interactive shopping experience.

Image segmentation refers to the process of dividing an image into multiple segments or regions based on certain criteria, such as colour, texture, or shape. This segmentation allows for the identification and isolation of individual objects within the image. By applying image segmentation to product images, the e-commerce website can extract valuable information about different products, such as their boundaries, attributes, or specific regions of interest.

The extracted segmentation information opens up a wide range of possibilities for enhancing the e-commerce website. For example, the website can provide more detailed product views by highlighting specific product features or segments. Customers can have a closer look at the desired products and make more informed purchasing decisions. Additionally, the segmented objects can be utilized for various purposes, including object recognition, virtual try-on experiences, image-based search, and personalized recommendations.

Furthermore, the e-commerce website can leverage the insights obtained from image segmentation to improve its overall functionality. By analysing segmented product images, the website can gather valuable data on customer preferences, market trends, and product attributes. This data can be used to optimize product recommendations, customize user experiences, and provide personalized suggestions tailored to individual preferences. Overall, an e-commerce website using image segmentation revolutionizes the way products are presented, analysed, and experienced by customers. It brings visual richness, interactivity, and advanced functionalities to the online shopping journey, enabling customers to explore products in greater detail and facilitating more engaging and personalized interactions.

II. LITERATURE SURVEY

The tutorial will explain the algorithm, implementation of pseudocode through Python using two major platforms: OpenCV and TensorFlow. We have proposed a transfer learning approach based on visual geometry group-19 (VGG-19) and Inception V3 to overcome the issues related to classification, product identification, product suggestion. [1]

They tested the accuracy of recognizing clothing of fashion models and obtained results of 93 percent. In this research, we propose a fast and accurate method of recognizing a clothes textile design and pattern. We used a modified 6-channel co-occurrence matrix with a random forest classifier. [2]

The Convolutional Neural Network (CNN) is a class of deep learning methods. Convolutional Neural Networks (CNN) can be said to be one of the most influential classes for image recognition among all deep learning approaches till now. [3]

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This paper presents a method based on principle of content-based image retrieval for online shopping based on colour, HSV aiming at efficient retrieval of images from the large database for online shopping specially for fashion shopping. [4]
The challenges faced were brainstorming the simplest yet feasible architecture. we take the user through the routes of creating a new user or login using automata theory concepts. Here, HSV modelling is used for creating our application with a huge image database, which compares image source with the destination components. [5]
The challenges faced were brainstorming the simplest yet feasible architecture. we take the user through the routes of creating a new user or login using automata theory concepts. [6] The growing use of internet-based banking and shopping has seen the growth of various e-commerce payment systems and technology has been developed to increase, improve and provide secure e-payment transactions. [7]
The role of slogans becomes crucial as competition among online marketplaces have also been tougher, thus demands the need for catchy, impressive slogans. [8]
Problems with digital services still occur at times, even for the most reliable services. Considering the consequences of these failures and their effects on the customer. [9]
This is an important of view of e-commerce platforms, the main evolution stage because successful supply research areas are transport management, chain management requires cross functional warehousing and inventory management. The article outlines the results of a study of the logistics functionalities of some leading e-commerce platforms and reveals some trends in their evolution and their readiness for supporting some of the supply chain management processes. [10]
The study examines how e-commerce capabilities affect performance gains and identifies the roles of market capitalizing agility and operational adjustment agility. Market capitalizing agility and operational adjustment agility also have positive impacts on financial and non-financial performance gains, respectively. The study highlights the importance of e-commerce capabilities and organizational agility. [11]
The study aims to investigate the influence of social culture and consumer advantage on the adoption of E-commerce. The study highlights the impact of the internet on the functionality of industries, and how it has changed traditional business models. The world is experiencing an industrial revolution in response to these changes. [12]
The study observes that issues such as tax loss and tax envision are significant just as the challenges like uncertainty. The growth of the internet and e-commerce has significantly changed the way business is conducted globally. However, it has also presented challenges to traditional tax approaches. The e-commerce business model has tax implications that create opportunities for tax avoidance, resulting in significant tax losses. This paper explores the development of internet taxation globally, with a focus on the world. [13] It proposes the use of Blockchain Layer2 technology as a potential solution to reduce fees and improve transaction volumes. The article introduces the problems faced by the e-commerce industry and discusses how layer2 technology can address these issues. It also analyses the costs associated with different e-commerce payment network topologies and investigates the funds-capacity needed to support high levels of value transfer. [14]
The main purpose of this study is to present a new e-commerce trend and their impact on international labour market. The fact is that nowadays a high speed of digitalization process caused significant changes in job preferences and employment. In this study the changes in labour market via e-commerce tendencies were described qualitatively and quantitatively. [15]

III. REQUIREMENTS

A. Software Requirements

Operating System: Windows and Linux
Technology: Python 3.8.10 and Java 1.7
IDE: Eclipse Indigo 2011

B. Hardware Requirements

Processor Core i3 and above
Memory RAM: 4GB, HDD:512GB

C. Proposed Algorithm/Methodology

Algorithm: YoloV3
Input: Item database and user or customer database
Output: Product Suggestion

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1) Module 1: Website

- Creating the first user interface creates a product website.

2) Module 2: Product Details

- User should be able to navigate to products> product details
- The user should get the required product details
- User should be able to get a recommendation.
- The user must be able to filter the products according to his needs.

3) Module 3: Cart Page

- User should be able to navigate to the cart page.
- The user must be able to add / remove products to the cart.
- The user must be able to navigate in order to continue the purchase button.
- User should be able to navigate to exit

4) Module 4: Exit

- User should be able to navigate to the exit page.
- The user should be able to explore different payment options
- The user must be able to evaluate their products with relevant information

5) Module 5: YOLO Algorithm

- Step 1: Download the models. We will start by downloading the models using the script file getModels.sh from the command line.
- Step 2: Initialize the parameters.
- Step 3: Load the model and classes.
- Step 4: Read the input.
- Step 5: Process each frame.

III.PROPOSED SYSTEM

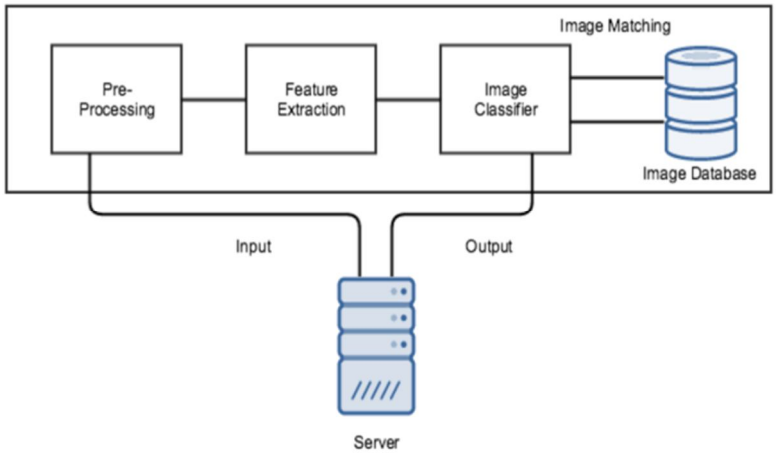


Fig 1-Architecture of Proposed System

A. Data Set

The first step is acquiring an experimental dataset. This dataset consists of a collection of product images along with their corresponding labels. The dataset serves as the foundation for training and testing the image segmentation and classification models.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
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B. Pre-Processing

Image pre-processing is a crucial step in enhancing the quality of images before performing computational processing. In this context, the website's screenshots or images undergo pre-processing techniques to eliminate noise and unwanted elements. This can involve various operations such as cropping or resizing the images, adjusting brightness and contrast, and applying filters to improve image clarity and remove irrelevant details.

C. Feature Extraction

Feature extraction is a process where relevant features of each image element are identified and extracted. These features can include characteristics such as colour, shape, size, and location. By extracting discriminative features, the system aims to capture the distinctive properties of each product and enhance the accuracy of subsequent classification.

D. Product Classification

The YOLO algorithm is applied to each pre-processed image from the e-commerce website. YOLO (You Only Look Once) is a popular object detection algorithm that is capable of segmenting an image into different objects and detecting the presence of each object within the image. In this step, the algorithm segments the objects within the image and identifies the different products present. Use the segmented objects to classify the product into appropriate categories.

IV. SPECIFICATION

A. Applications

1) It can be used in online shopping websites.
2) Virtual Try-On: Image segmentation can be employed for virtual try-on experiences, allowing customers to visualize how certain products.
3) The website can leverage image segmentation to extract meaningful insights from product images. This can include analyzing customer preferences, identifying popular trends or styles, or gathering data for market research and targeted marketing campaigns.
4) mage segmentation can be combined with augmented reality technology to enable interactive and immersive experiences.
5) By utilizing image segmentation, the website can offer customization options for products. Customers can select specific regions or objects within an image and customize them according to their preferences, such as adding personalized text, choosing colors, or applying patterns.

B. Advantages

1) Improved Product Search: Image segmentation enhances the search functionality by allowing customers to find products based on visual attributes rather than relying solely on text-based search. This improves the accuracy and relevance of search results, leading to a better user experience.
2) Enhanced Product Categorization: By using image segmentation, products can be automatically categorized based on their visual features. This improves the efficiency of organizing and presenting products on the website, making it easier for customers to navigate and find what they are looking for.
3) Personalized Recommendations: Image segmentation enables the extraction of visual features from product images, which can be used to provide personalized recommendations to customers. By considering the visual preferences of customers, the system can suggest similar or complementary products that align with their tastes, increasing the chances of making a sale.
4) Visual Representation: Image segmentation helps in creating a clean and consistent visual representation of products. By removing the background or isolating the main objects, the focus is solely on the product itself. This enhances the aesthetic appeal and allows customers to get a better view of the product details.

C. Future Scope

1) Explore and implement advanced image segmentation algorithms to improve the accuracy and quality of segmentation results.
2) Develop automated product categorization techniques using image segmentation results. By analyzing the segmented objects and their attributes, the system can automatically assign products to appropriate categories, reducing the need for manual categorization.

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3) Explore the integration of augmented reality technology to enhance the online shopping experience. By overlaying segmented product images onto the user's real-world environment, customers can virtually try out products, visualize how they would look in their surroundings, and make more informed purchase decisions.

4) Utilize image segmentation data to improve personalized product recommendation systems. By analyzing users' segmented product preferences and purchase history, the system can suggest relevant products that align with their preferences and style.

5) Extend the e-commerce website by developing a dedicated mobile application that leverages image segmentation capabilities. This allows users to easily access and interact with the platform from their mobile devices, facilitating seamless on-the-go shopping experiences.

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V. CONCLUSIONS

The proposed work, the customers can be assured with a better satisfaction as the related products are suggested as soon as they select a product image to purchase as the recommendation algorithm contains various techniques of finding the similar products. With the help of this system, the ecommerce platform can successfully increase the sales and also improve customer experience.

The proposed work, the customers can be assured with a better satisfaction as the related products are suggested as soon as they select a product image to purchase as the recommendation algorithm contains various techniques of finding the similar products. With the help of this system, the ecommerce platform can successfully increase the sales and also improve customer experience.

Overall, the integration of image segmentation technology in the e-commerce website has resulted in significant enhancements and a competitive edge in the industry.

VI. ACKNOWLEDGMENT

I would like to express my heartfelt appreciation to all those who have provided assistance and support in the completion of this research paper. Firstly, I would like to extend my gratitude to my mentor, Ms. Deepali Dhadwad, for their unwavering guidance and encouragement throughout the research process. Their valuable insights and suggestions have played a crucial role in shaping the direction of my research.

I am also thankful for the valuable contributions made by others to this research. Their expertise and input have been indispensable in achieving the research objectives, and their involvement is deeply appreciated. I would like to express my thanks to the participants who willingly took part in this research, generously sharing their insights and experiences. Without their willingness to participate, the completion of this research would not have been possible.

Finally, I would like to extend my gratitude to all individuals who have contributed to the success of this research paper. Your support and guidance have been immensely valuable and greatly appreciated.

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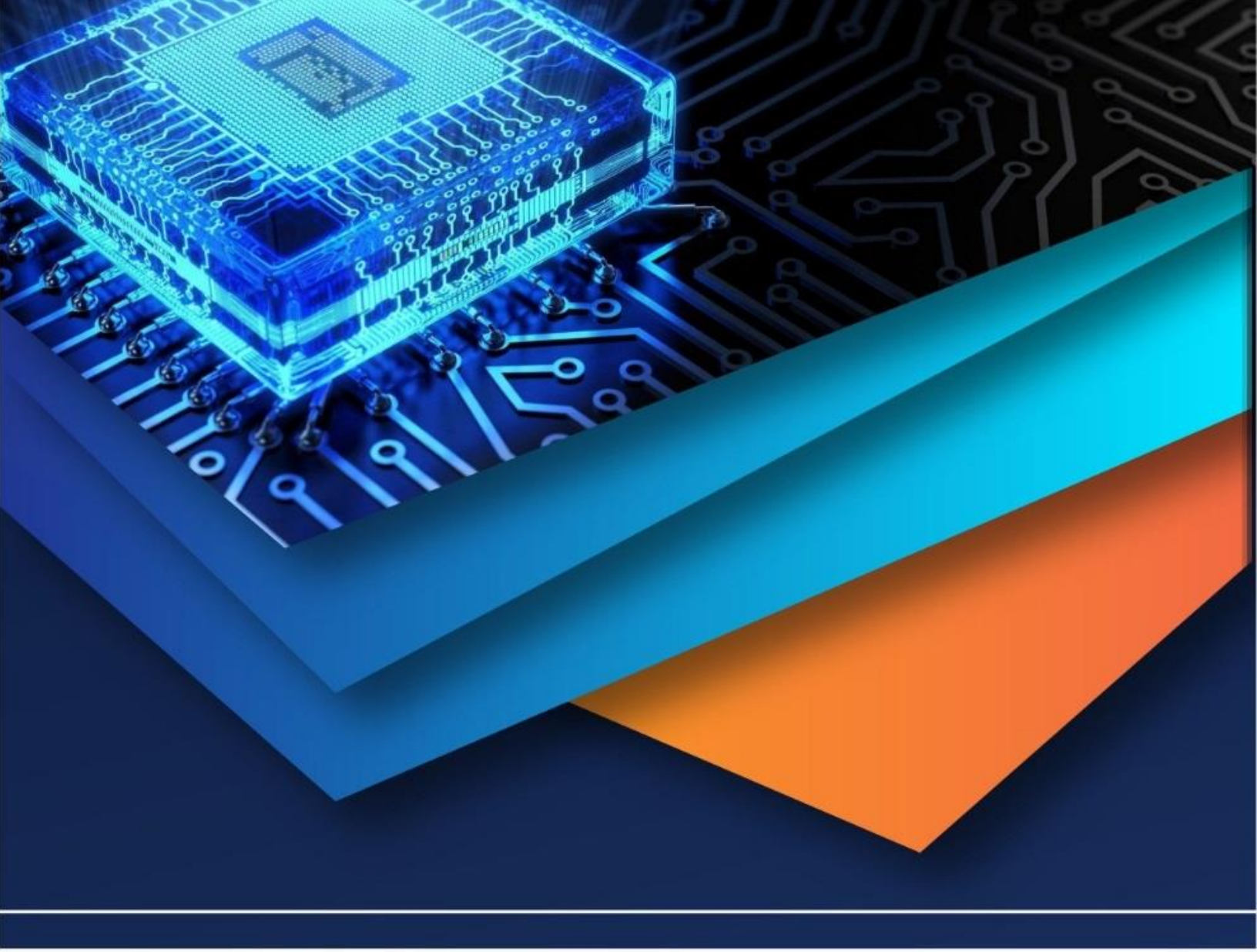
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