

# Fake Product Detection using Image Processing

Pooja C P<sup>1</sup> and Arunkumar K L<sup>2</sup>

Post Graduate Student, Department of Computer of Application<sup>1</sup>

Assistant Professor, Department of Computer Application<sup>2</sup>

Jawaharlal Nehru National College of Engineering, Shimoga, Karnataka, India

**Abstract:** *Nowadays, the entire global has grown up every fasted similarly the technology also grown up. So, my project is basically fake product detection. The people can know how the product are fake or original in all the counterfeit product. In my project I ,have mainly taken the product is Bisleri bottles using the image processing with python language is used to identify the original or fake product using the key feature extraction with using of open cv module we can identify the product. In my project targeted on distance and key points of train image and inputted image. Computing those images we can easily find out the original and fake product.*

**Keywords:** Image Processing, Python, KNN Algorithm, ORB Feature Descriptor

## I. INTRODUCTION

In, this project the original and fake product are always risk considerations in the global development of a product or technology, and they can harm the company's name, revenue, and consumer health. To determine whether the goods is original or fake. The process of identifying counterfeiting. In contrast, a highly profitable and simple business model is made possible by the low production costs, quick access to prospective customers, and listing close to well-known companies. Manufacturers are experiencing a major problem and significant losses as a result of counterfeit or imitation items. To find the authenticity to verify the products using image processing with python tools. In this project main used ORB algorithm to detect image features with their key points (orb-oriented fast and rotated brief) ORB is faster one and free to use and it detect the key points and compute the images. Descriptors are basically an arrays or numbers. ORB finds the 500 features in the images by default and it described in 32 values. It is faster robust for all image feature detector. It is deployed for 3D reconstruction and object recognition. It quickly identifies the main visual description points. The orb is used for a fast and effective orienting component. BRIEF is binary robust independent elementary feature. To know the similarity in the images we use the matcher. It is one of common in Brute force descriptor matcher. For every one of the first set's descriptors. This matcher tries each one and selects the closest descriptor in the second batch. This descriptor matcher allows you to hide descriptor set matches that are valid. The standard method used by BFMatcher to determine the k nearest neighbours for each query descriptor. KNN k-nearest neighbours' algorithm use in brute force to find out the two values of k. And also we find distance between matcher are low or high .if it is low it consider as good match or consider as bad image matcher. Here we can increase nfeature values in orb. Then, we'll concentrate on the application and assessment of these solutions as well as their difficulties. Finally, we will get the original and fake products, as well as the results of our effort, and we will think about the prospects for the future.

## II. LITERATURE SURVEY

- [1]. Tejaswini Tambe et al., [8] Here, block chain technology is used to detect the fake products. The QR code is encoded to scan and detect the fake products the users or a customers can detect the fake products using QR code. Here they have used SHA-256 algorithm. They have developed this using android studio and firebase for coding. To scan the QR code for a particular product to get the information like transaction history, current owner of end user.
- [2]. Eduard Daoud et al., [9]has propose a work detection of fake products using core deep learning techniques and neural network technologies. In this, image reorganization can be used to detect the accurate fake products detection. In the beginning they have trained the data and later they detected it as fake or original.
- [3]. Aditya Darak et al.,[10] has propose the work mainly concentrate on building a fraud risk management system based on the intelligent mitigation models and data processing. Based on the user behavior it can capture a fraudulent

transactions, It can be predict the susticious users and transactions. Naive bayes, sentimental analysis and natural language processing J48 classifier is used to detect the review spammer.

[4]. Ata-Ur-Rehman et al., [11]. In this work the dataset contain the Urdu and roman Urdu review. It is one of the very difficult task to detect the fake review who don't known this language. So that why n-gram approach is used, this can detect multiple language fake reviews. This approach used SVM classifier and aboster the fake reviews. Using this the customer can identify the product is fake or not.

[5]. Madhura N Hegde et al., [7] the proposed work is based on the fake product review monitoring. Using the sentiment analysis and K means clustering method to find the product review [1] to [6]. The review can be predict based on the input of user. Mainly detect the fake review and spam review of the product.

### III. PROPOSED METHODOLOGY

In this experimental project, the methodology of my project first I have to load the image by using of video capture. Then that image can convert to original to binary image and finds the key points of the loaded image and trained images. To find out the key points in this project using by Brute force descriptor in that knn algorithm is used. In this mainly import the package is open cv2, it is open source library in computer vision like image processing and machine learning etc. It can process the videos and images to identify the objects. It detect and compute the images and gives the output as original image.

#### 3.1 Algorithm

Step 1: Load the Image Query dataset.

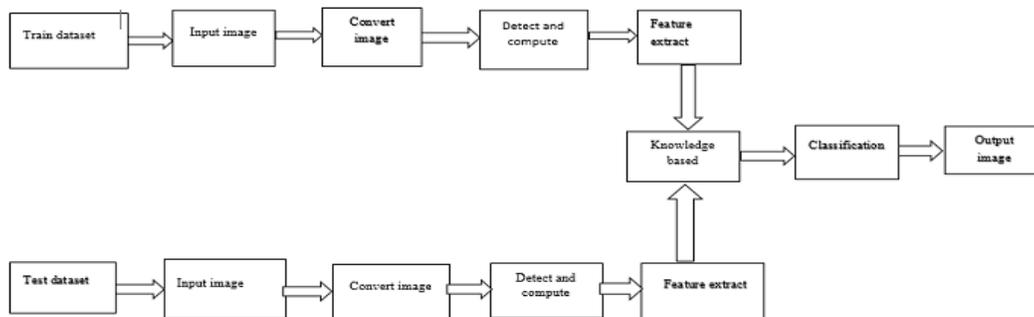
Step 2: Detect the key points in the image using Brute force and KNN algorithm.

Step 3: Detect the distance using Brute force and KNN algorithm.

Step 4: If distance is less than 0.75, it is good.

Step 5: Display the image using video capture to check whether it is original or fake.

Step 6: Display the result as original as fake based on the conditions mention.



**Figure 1:** Block Diagram

In the figure 1, first input image is convert to grayscale image then detect and compute the loaded image, then that image matches with the train images using orb feature descriptor. If it matches the correct the output will be original image or fake image.

### IV. IMPLEMENTATION

Here, the dataset is used as a custom dataset to train the images by downloading from internet source. Here our dataset has used different images, they are in the form of JPEG format. The images are stored in image query. These image are in RGB format. The color images are input by video capture. The image is loaded and it convert into grayscale image, because to reduce the computation of images. For detect and compute the image by using ORB feature detector is used. It detect the input image features. It is fast to identify the image features. ORB uses the binary robust independent elementary features to identify the key points. ORB is more efficient to alternative SIFT and SURE algorithms are used

to detect the key points, then extract the features of the images. It detect the feature and match those feature with other image. Using open CV in python feature matching with Brute force. Open CV is a library used to solve the computer vision problems. To draw the feature matches using drawMatches () function. Basically Brute force matching is the features of train image with input image. Key points are features of the image that shows the similar points in the images. The descriptors are find the distance between the both images. This approach is also used the algorithm is KNN k nearest neighbour, it is a image classification algorithm. It identify the distance between features of two images. Also detect the similarity features of both images. KNN algorithm has the highest accuracy, only the quality prediction is based on distance measure. Using descriptor we can match the both images. Then comparing both images with both features of train and test images that can conclude the image is original or fake image.

Result Analysis:



Figure 2: Detect original and fake products

In the figure 2, left side column represent the original products and right side column represent the fake products of images. Classify this result by using train and test the different images of dataset.

## V. CONCLUSION

In this project research identify the fake and original image of Bisleri and other product are used. This project present an extensive of research on fake product detection. So, in this project strong need to detect the fake product and image processing python is used to detect the images. Using a different methods of feature extraction we can differentiate the images. It can be helpful for the end user of the product. Knn is the main algorithm used in this project to find out the key points of images. The focused of this project is to implementations have a practical impact on counterfeiting products and the affecting the image processing with python to detect depends on how the consumer can easily and simple way to interact with the system. Using image recognition, the approach be improve fake product detection.

## REFERENCES

- [1]. Arunkumar K L, Ajit Danti, Manjunatha H, Classification of Vehicle Make Based on Geometric Features and Appearance-Based Attributes Under Complex Background, Springer 1035 (CCIS), pp 41-48
- [2]. Arunkumar K L, Ajit Danti, Manjunatha H , “A Novel Approach For Vehicle Recognition Based On The Tail Lights Geometrical Features In The Night Vision”, International Journal of Computer Engineering and Applications, Volume XI

- [3]. Manjunatha HT, Arunkumar K L, Ajit Danti, “ A Novel Approach for Detection and Recognition of Traffic Signs for Automatic Driver Assistance System Under Cluttered Background”, Springer 1035 (CCIS), pp 407-419
- [4]. KL Arunkumar, A Danti, HT Manjunatha, “Estimation of vehicle distance based on feature points using monocular vision”, IEEE 8816996 (2019), 1-5
- [5]. KL Arunkumar, A Danti, HT Manjunatha, D Rohith, “Classification of Vehicle Type on Indian Road Scene Based on Deep Learning”, Springer, Singapore 1380 (2021), 1-10
- [6]. HT Manjunatha, A Danti, KL ArunKumar, D Rohith, “Indian Road Lanes Detection Based on Regression and clustering using Video Processing Techniques”, Springer, Singapore 1380 (CCIS), 193-206
- [7]. Arunkumar K L, Ajit Danti , Recognition of Vehicle using geometrical features of a tail light in the night vision, , National Conference on Computation Science and Soft Computing (NCCSSC-2018)
- [8]. V. K. Madhura N Hegde, Sanjeetha K Shetty, Sheikh Mohammed Anas, “Fake product review monitoring,” Int. Res. J. Eng. Technol., vol. 05, no. 06, p. 4, 2018
- [9]. Tejaswini Tambe , Sonali Chitalkar, Manali Khurud, Madhavi Varpe , S. Y. Raut “Fake Product Detection Using Blockchain Technology”.
- [10]. Daoud, Eduard & Vu Nguyen Hai, Dang & Nguyen, Hung & Gaedke, Martin. (2020). Enhancing Fake Product Detection Using Deep Learning Object Detection Models. 15. 13-24. 10.33965/ijcsis\_2020150102.
- [11]. Aditya Darak, Akhil Chaudhary, " Fake Product Review Detection and Removal “,2018.
- [12]. Ata-Ur-Rehman et al., "Intelligent Interface for Fake Product Review Monitoring and Removal," 2019 16th International Conference on Electrical Engineering, Computing Science and Automatic Control (CCE), 2019, pp. 1-6, doi: 10.1109/ICEEE.2019.8884529.
- [13]. Manjunatha HT and AjitDanti. “A Novel Approach for Detection and Recognition of Traffic Signs for Automatic Driver Assistance System Under Cluttered Background” - Recent Trends on Image Processing and Pattern Recognition, Springer Nature Singapore, Pte Ltd. 2019, RTIP2R 2018, CCIS 1035, pp. 1–8, 2019, ISBN 978-981-13-9181-1
- [14]. Manjunatha HT and Ajit Danti. “Detection and Classification of Potholes in Indian Roads using Wavelet Based Energy Modules“IEEE- 978-1-5386-9319-3/19 © 2019
- [15]. Manjunatha HT and AjitDanti, ” Indian traffic sign board recognition using Normalized Correlation Method”, International Journal of Computer Engineering and Applications (IJCEA), Volume XII, Issue III, March 18, ISSN 2321-3469
- [16]. Manjunatha HT and AjitDanti, “Segmentation of Traffic Sign Board in a cluttered background using Using Digital Image Processing”, National Conference on Network Security, Image Processing and Information Technology, March 2017.