

A Survey on Fake Logo Detection on Artificial Intelligence

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ABSTRACT:

A fake logo detector is a device that detects illegal produced or counterfeit brand products. The focus of Our image detection process was used to build the detector's product logo detector. with a darknet framework A dataset is created using the logos of copyright products.

Furthermore, OpenCV image classification by DNN&CNN modules is used in Python language to read our dataset and work in Windows OS platform, to create a Graphical User Interface (GUI) simply including the creating a function to support the various application. This Throughout this research, the main variable will be the study's population. As a result, 99% confidence scores can be obtained when detecting fake logos and 97% confidence scores when detecting authentic logos.

KEYWORDS: Fake logo, CNN, OpenCV, DNN

Computers learn by using machine learning algorithms that allow us to learn from and forecast our own data. Machine learning algorithms produce predictions and judgments based on training data, even if they aren't explicitly designed. Data or observations are used to begin the learning process. Instructions to look for examples, first hand experiences, or statistical patterns, and to utilize the examples to make better decisions in the future. The key goal is for the computer to learn on its own and change its activities accordingly, without the need for human involvement. Text, on the other hand, is treated as a set of keywords in typical machine learning methods. A semantic analysis-based technique, on the other hand, imitates the human ability to comprehend the meaning of text. We can analyze large volume of data in Machine learning. In general, when it comes to spotting lucrative opportunities and risky threats it obtains faster and more accurate results, but adequate training may take more time and resources. A logo is a unique graphic, word, or combination of words and graphics that identifies a company, public institution, institution, or individual product or service. It is also considered a means of identifying companies, organizations, or institutions themselves around the world. Logos can be found in a variety of shapes, colors and styles, but they have certain design limitations because they need to be eye-catching and easily recognizable. Basically, logo recognition consists of three main steps. 1. Identify possible logos from the image. 2. Recognizes logo candidates found in the database. 3. Identify whether the image is original or fake.

I. INTRODUCTION:

Each year, brands lose a significant portion of their sales due to fraudulent counterfeit and counterfeit products. Consumers often end up paying exorbitant amounts for mere counterfeiting and are fooled by the hard-earned money. Consumers are also often scammed by hard-earned money. They will pay an exorbitant amount just for the fake. This logo recognition project Ensures that counterfeit products are distinguished from genuine ones. It enables consumers to discern original products from counterfeits. Brands fighting counterfeit products can also benefit from this application. Consumers will be able to distinguish genuine products from counterfeits with the help of logo recognition. Consumers can verify the authenticity of the product using this system. Brands struggling to fight counterfeit products may also find this application useful. In addition to denying the brand sales, counterfeit products have a negative effect on its reputation as well.

II. LITERATURE SURVEY:

[1] Zhang Nan et.al An element extraction strategy, PCA, as well as Kernel PCA, has been utilized by Zhang Nan et.al., in this survey. KNN and SVM are used for comparison and analysis of

back propagation feed forwarding neural network classifiers. A 97.5% accuracy rate was reported in the overall results.

[2] **Bailing Zhang et.al**The framework for the most part can be divided into two stages, namely the detection of logos and the classification of logos, as demonstrated by Bailing Zhang et.al., (1995). A vehicle locale recognition module and a small region of interest module assist with the first stage of the process. It is possible to restrict logo placement from frontal vehicles pictures to maximize the return on initial capital investment. Support Vector Machine (SVM) with Adaboost is utilized with a two-organization classifier that uses the divided ROI to locate the logos accurately.

[3] **Chun Pan et al**A 95% exactness rate is promising. A classifier based on subsampling was used by Chun Pan et al to identify logos and then be fed into CNN for further classification. In the comparison study, CNN alone is used and SIFT

with SVM is used as the method of choice. There is an 8.61% higher significance of normal identification precision with CNN over SIFT. They received an accuracy rating of 99.23% from CNN.

[4] **N Vinay Kumar et.al**Using the global features of logo images for the classification, N Vinay Kumar et.al proposed the classification model. The overall characteristics of a logo are based on the texture, color, and shape of the image. Their model's efficiency is moderate because there are a limited amount of features for the fusion process.

[5] **Changbo Hu et.al**Using convolutional neural networks and context features, Changbo Hu et.al have designed a multimodal fusion model to handle brand identification by integrating the image on the basis of logo identification.

[6] **Shreyansh Gandhi et.al**Image recognition system based on computer vision for identifying offensive and noncompliant images large data sets has been proposed by Shreyansh Gandhi et.al.

III. RESULTS & DISCUSSION:

Sl.No	Author	Technology Used	Remarks
1	Zhang Nan	PCA Strategy, KNN, Support Vector Machine(SVM)	For comparative analysis and study, they use back propagation feed forwarding neural network classifiers, KNN and SVM. As a result, 97.5% of the results were accurate.
2	Bailing Zhang	SVM, Adaboost Mix	Results show a promising rush of 95% exactness.
3	Chun Pan	Conventional Neural Networks(CNN), SIFT	Using CNN as a methodology, the normal identification precision pace is 8.61% greater than that relying on SIFT as a methodology. Thus, CNN has been chosen since it provided 99.23% accuracy.
4	N Vinay Kumar	Classification Models	Classification models uses the global characteristics of logo images to determine classifications.

5	Changbo Hu	Multimodal fusion procedure	Multimodal fusion procedure by Changbo Hu This method integrates an image into a logo representation based on multimodal fusion procedures.
6	Shreyansh Gandhi	non-compliant image identification system	An image identification system that is non-compliant was presented by Shreyansh Gandhicomputer vision based offensive and the non-compliant image identification system for data sets of large size.

IV. CONCLUSION:

AI usage has been gone tremendously these days, and most of the people faced problems related to fraudulent logos and hence this application will help to identify proper logo which companies and people can understand which is legitimate and which is not by linking applications related to AI and the fake companies which impersonate the company logo shall be removed too.

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