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Face Detection on profile picture using Viola-Jones Algorithm.

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***Abstract*—This project focuses on implementing a face detection algorithm on a to verify the authenticity of profile pictures uploaded by users. In order to help recruiters more properly confirm the identity of potential job seekers, it is important to make sure that every profile photo contains only one face. Because of its effectiveness and precision, the Haar Cascade classifier is selected as the face detection algorithm. A face detection model is trained on a dataset of images containing faces, and the profile pictures uploaded by users are preprocessed and fed to the model to detect faces. If the model detects more than one face or no faces in a profile picture, the user is prompted to upload a new picture. The implementation of face detection on the website involves writing a script that preprocesses the uploaded picture and applies the face detection algorithm. As a result of this project, recruiters will have an improved user experience on the website, which will allow them to more effectively check the authenticity of potential applicants.**

***Keywords*—Face detection, Dataset, Haar Cascade Classifier, User experience, Algorithm.**

I. INTRODUCTION

In the current digital era, social media and business networking websites have developed into crucial resources for recruiters to identify and screen job candidates. However, it can be challenging to confirm the authenticity of the data provided on these websites, particularly profile pictures. Face identification comes into play in this situation; by utilising machine learning algorithms to find faces in photographs, recruiters may be more certain that the profiles they are looking at are of the real person. Writing code to preprocess the uploaded image and apply the face detection algorithm is required to integrate face detection on the website. By doing this, we intend to enhance recruiters' experience using the website and enable them to more properly confirm the legitimacy of possible opportunities for employment. Overall, the study highlights how crucial it is to integrate face detection on professional networking sites in order to increase the precision and dependability of profile data.

II. LITERATURE SURVEY

Ghosh, Garg and Prasad[1] provides an in-depth analysis of the state-of-the-art techniques for face detection using deep learning. The authors have covered various aspects of face detection using deep learning, including the different architectures used, the datasets used for training, the evaluation metrics used, and the applications of face detection.

Zhu, Liu, and Lei[2] provides a comprehensive review of face detection methods in unconstrained environments, also known as "face detection in the wild". The authors cover the evolution of face detection techniques over the years, the challenges faced in this domain, and the future directions in this field.

Chen, Deng, and Wang[3] proposes a new face detection method that achieves state-of-the-art results in unconstrained environments. The authors introduce a progressive dense fusion (PDF) framework that combines multiple convolutional neural networks (CNNs) at different levels of granularity to achieve better accuracy and robustness in face detection.

Zhang et al.[4] proposes a multitask cascaded convolutional network (MTCNN) for joint face detection and alignment. The MTCNN consists of three stages of deep convolutional neural networks (CNNs) that are trained to detect faces at different scales and perform landmark detection for face alignment.

Yang et al.[5] presents a new benchmark dataset for face detection and recognition, called the Wider face and pedestrian dataset. The authors also provide a comprehensive survey of recent advances in face detection and recognition.

III. VIOLA-JONES ALGORITHM

The Viola-Jones algorithm, also known as the Haar Cascade classifier, is a machine learning-based object detection algorithm that was developed by Paul Viola and Michael Jones in 2001.This algorithm locates areas of a picture that are likely to contain an item of interest, such as a face or a pedestrian, using a set of properties known as Haar-like features. Haar-like features are simple rectangular patterns that are used to describe local image properties, such as edges and texture.Integral images, a type of image representation that enables quick calculation of sums of pixel values in rectangular areas, can be used to effectively compute these attributes.

To determine if the discovered regions are in fact items of interest, the Viola-Jones algorithm applies a cascade of classifiers to those regions.The cascade consists of a series of classifiers, each of which is trained to detect increasingly complex patterns associated with the object of interest.

The approach is implemented in several well-known computer vision libraries, such as OpenCV, and is extensively used in computer vision applications, such as face identification, object tracking, and gesture recognition.

IV. METHODOLOGY

1. Data Collection:

The first step involves collecting image data that contains human faces. This can be in the form of profile pictures uploaded by users.

2. Data Pre-Processing:

In this step, the image data is decoded and converted to grayscale for easier processing. This makes it easier to detect the features of the face in the image.

3. Face Detection:

Haar Cascade classifier is used to detect the face in the image. This classifier is trained to detect the features of the human face, such as the nose, eyes, and mouth. The "cv2.CascadeClassifier" function is used to initialize the classifier with the pre-trained XML file "haarcascade_frontalface_default.xml".

4. Feature Detection:

The "detectMultiScale" function is used to detect the features of the face in the image. This function applies the classifier to the image at different scales to detect faces of different sizes. The output is a list of bounding boxes that surround the detected faces.

5. Face Counting:

The number of detected faces is checked to ensure that only one face is present in the image. If more than one face is detected or no faces are detected, an error message is displayed to the user.

6. Final Output:

If only one face is detected in the image, the face is considered valid and can be used as the user's profile picture. The image is then saved or used for further processing, depending on the application.

V. FIGURES AND TABLES

Import the package that are necessary.

```
import NumPy as np
import cv2
```

cv2 is used for reading and processing the input image, while np is used for converting the input data to a NumPy array format.

```
if profile is not None:
  img = v2.imdecode(np.fromstring(profile.read(),
np.uint8), cv2.IMREAD_UNCHANGED)
  gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
  face_cascade =
cv2.CascadeClassifier(cv2.data.haarcascades +
"haarcascade_frontalface_default.xml")
  faces = face_cascade.detectMultiScale(gray,
scaleFactor=1.3, minNeighbors=5)
  if len(faces) != 1:
     return render(request, "network/register.html", {
        "msg": "Profile pic must have exactly one face."
     })
```

TABLE 1

id	password	last_login	is_superuser	username	last_name	email	is_staff	is_active	date_joined	profile_pic
Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
21	pbkdf2_sha256$600000$ag7YdujIUUKdELgsrmQa...	2023-05-01 06:59:01.650510	0	bilahari	Amsu	yadu598@gmail.com	0	1	2023-03-15 06:17:22	profile_pic/IMG_20220526_210008.jpg
22	pbkdf2_sha256$600000$FWSjjqDF30x4QcorRYm...	2023-05-01 07:07:11.820182	1	admin		admin@gmail.com	1	1	2023-03-15 06:20:47.183485	
23	pbkdf2_sha256$600000$zFcj17gnQDK4o8pSxuZf...	2023-04-17 17:08:18.651947	0	devika	Sahadevan	devika@gmail.com	0	1	2023-03-29 01:25:57.157678	profile_pic/495A8512-1.jpg
24	pbkdf2_sha256$180000$wKr7pCtRgzCu$rPhRP4b...	2023-03-29 01:28:39.040944	0	akshay	Kumar	akshay@gmail.com	0	1	2023-03-29 01:28:38.896737	profile_pic/...
25	pbkdf2_sha256$600000$kEdwPr3frz4cHSnwH8eZ...	2023-04-18 05:51:31.246603	0	alanshijo	Shijo	alanshijo@gmail.com	0	1	2023-03-29 01:29:57.124791	profile_pic/mateo-avila-chinchilla-x_8oJhYU31k-...
29	pbkdf2_sha256$600000$6cUK2DYo0ZsCK56UeIye...	2023-04-30 06:32:47.151474	0	wipro		wipro@gmail.com	1	1	2023-03-30 10:27:25	profile_pic/...
30	pbkdf2_sha256$180000$M7AOLHRAMHHz$lzYlz...	2023-04-03 04:43:13	0	tcs		tcs@gmail.com	1	1	2023-03-30 16:55:09	profile_pic/TCS.NS-7401f1bd.png
32	pbkdf2_sha256$600000$71iuMrnvbarYcBQ8xqmf...	2023-04-29 09:44:58.108542	0	accenture		accenture@gmail.com	1	1	2023-03-31 07:03:50	profile_pic/channels4_profile.jpg

VI. RESULT

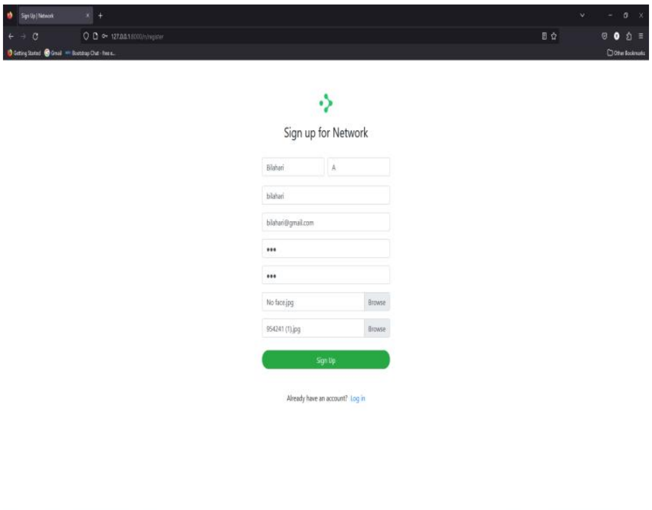

Fig:1

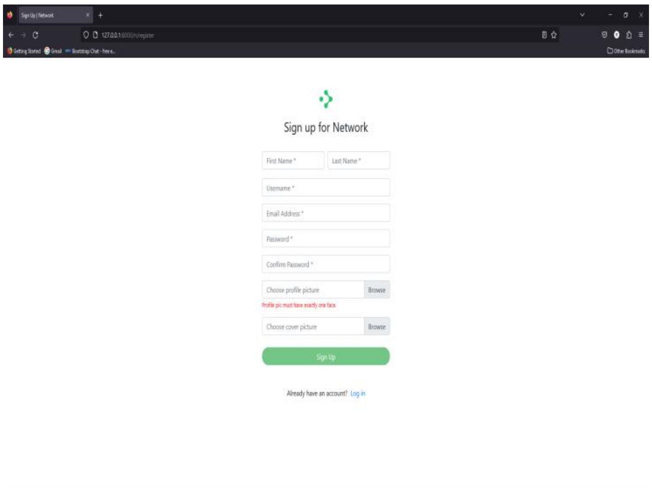

Fig:2

VII. CONCLUSION

In this paper, we have demonstrated the importance of implementing face detection on a website to verify the authenticity of profile pictures uploaded by users.We have assured that each profile photo has precisely one face by preprocessing submitted profile pictures before using the algorithm and developing a face identification model using the Haar Cascade classifier. This enhances the overall user experience on the website by enabling recruiters to more properly confirm the identification of potential job seekers.

In order to improve the precision and dependability of profile data, it may be possible to develop this project in the future by adding other features like emotion recognition or age estimation. Overall, this study provides proof of the strength of machine learning algorithms and their potential to significantly enhance our daily lives.

VIII.REFERENCES

[1] Ghosh, S., Garg, D., and Prasad, M. (2021). Face detection using deep learning: A comprehensive review. Computer Science Review, 39, 100354.

[2] Zhu, Y., Liu, X., and Lei, Z. (2020). A survey on face detection in the wild: Past, present and future. IEEE Transactions on Circuits and Systems for Video Technology, 30(11), 3885-3907.

[3] Chen, X., Deng, C., and Wang, X. (2019). Progressive dense fusion for unconstrained face detection. In Proceedings of the IEEE International Conference on Computer Vision, 2973-2982.

[4] Zhang, K., Zhang, Z., Li, Z., and Qiao, Y. (2016). Joint face detection and alignment using multitask cascaded convolutional networks. IEEE Signal Processing Letters, 23(10), 1499-1503.

[5] Yang, S., Luo, P., Loy, C. C., & Tang, X. (2016). WIDER FACE: A face detection benchmark. In Proceedings of the IEEE conference on computer vision and pattern recognition (pp. 5525-5533).

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