



MPSeDC

Face Detection and Face Counting

AI (Artificial Intelligence) and Machine Learning (ML) Experiments



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Face Detection and Face Counting

1. Background

Directorate of Skill Development (DSD) has a Vision is to provide quality training and employable vocational skills in the demand oriented manufacturing and service sectors so as to transform lives of youth of the state. DSD conducts various courses on skill development wherein candidates enrol and undergo training. It is required for the trainers to record the attendance of the candidates during each batch of training in a day. DSD was looking for a solution to auto-record the candidate's attendance herein a Face Detection module was developed using Microsoft Azure Face API that detects and counts the Faces in an image captured by the Trainer in the respective batch of training.

2. Problem Statement

Build a Machine Learning Algorithm to Detect and count the number of Faces in an Input Photograph Image.

3. Methodology

Azure Machine Learning Algorithm offered by Microsoft Cognitive Services (“**azure-cognitiveservices-vision-face**”) have been used and in this experiment and following is the Process flow implemented for Face Recognition using the respective Microsoft Cognitive Services library.

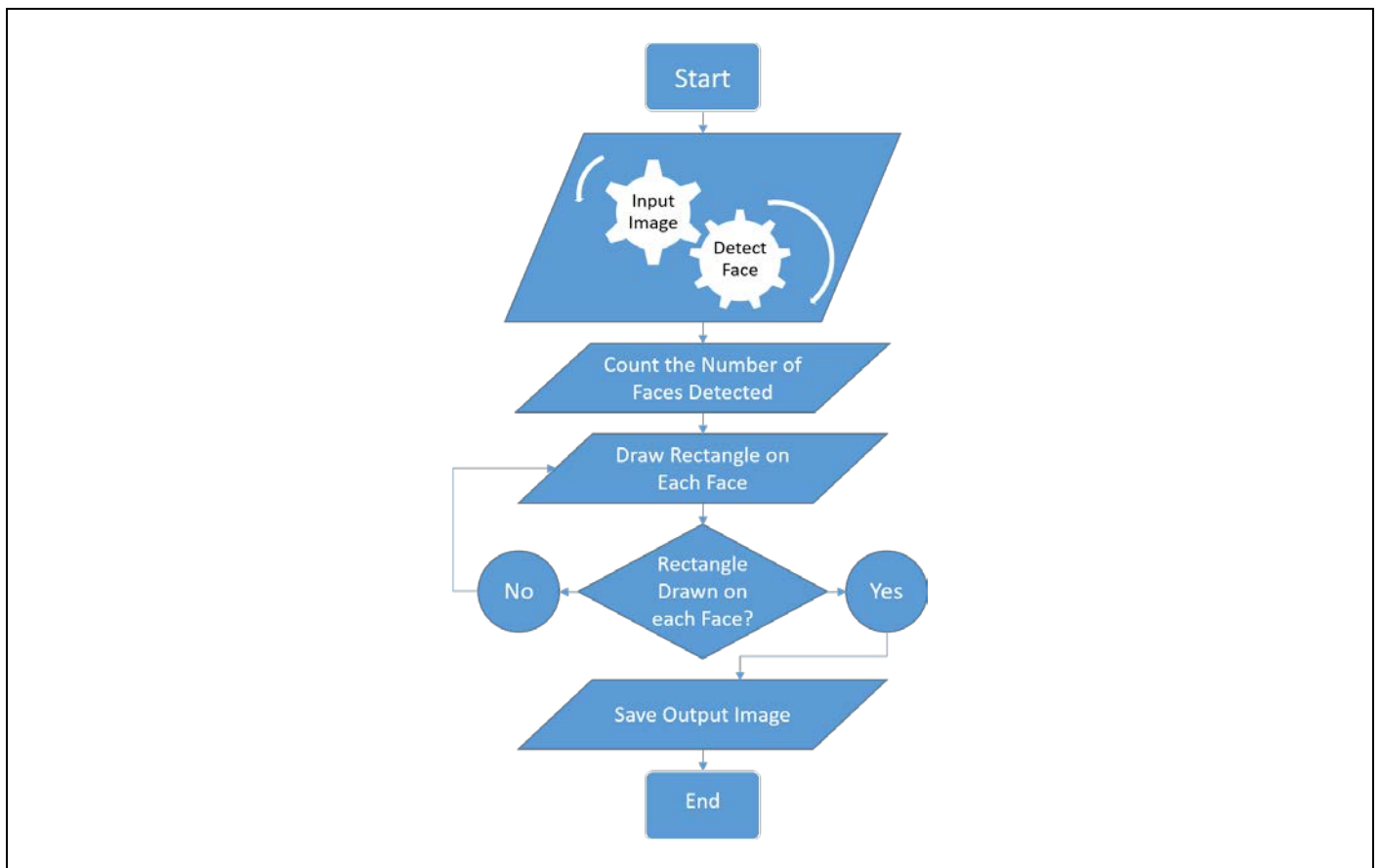


Figure 1 Face Detection Process

4. Input Data

The Face Detection Algorithm takes input data as images stored in a location accessible through web link URL as shown in the Figure 2 below.

4.1. Data Fields

'Input_Image' (Path_1): - Image Path URL (The supported input image formats are JPEG, PNG, GIF for the first frame, and BMP.)

Path_1
https://core.windows.net/facedetectioninput/groupimage_7.jpg

Figure 2 Input Data

5. Output Result

Path_1	FaceCount	FinalImagePath	FinalImageURL
https://core.windows.net/facedetectioninput/groupimage_7.jpg	36	/root/Output/01625497608.8808622.png	https://core.windows.net/facedetectionoutputmodel/01625497608.8808622.png

Figure 3 Output Results



Input Image	Output Image Face Detected
	
	Face Count 36

Table 1 Sample Output Result with Images

6. Deployment and Consumption

The Face Detection process have been deployed in Microsoft Azure Kubernetes Cluster and the Endpoints have been provided for integration with DSD Portal Application

input1		output1	
Path_1	https://r . .windows.net/facedete...	key	value
		Path_1	https://r . .windows.net/facedetectioninp
		FaceCount	36
		FinalImagePath	/root/Output/01625497608.8808622.png
		FinalImageURL	https://r . .windows.net/facedetectionout

Figure 4 Web API Input and Output

6.1. Web API Input

The Web API takes 01 input

Input_Image (Path_1) – Image Captured while marking attendance by the Trainer in a Training Batch

6.2. Web API Output

The Web API provide Output Result as

Final Image Url – Image with Rectangle drawn on each Face in Input_Image

Face Count – Number of Faces detected in the input image

7. Output Results from DSD Portal

DSD Portal Integration Interface

The screenshot displays the 'DSD Portal Integration Interface'. On the left is a navigation menu for 'M.P. Skill Development' with options like 'Admission Dashboard', 'Front Menu', 'Master', 'Settings & Configuration', 'Get Data From MPOONLINE', 'Employee Management', and 'Vivarnika'. The main content area shows a 'Welcome : Padam Gulwani' header and a 'Upload Trainee Group Image of Batch' form. The form includes a message 'Information successfully fetched.', a 'Batch No.' field with the value 'N-721-453-1-1 (PU23000984)', and a 'Trainee Group Image' field with a file named 'TestImage.PNG'. A green 'SUBMIT' button is visible. Below the form, a 'Trainee Count: 6' is displayed above an image of a group of trainees. The image shows six individuals with blue bounding boxes around their faces. To the right, a table lists batch information with columns for 'Academic Session/Total Trainee', 'Batch Status', and 'Action'. The table contains three rows, all with a status of 'To Be Started'.

Face Count 6

Table 2 Output Results - DSD Portal Integration

8. References

- <https://docs.microsoft.com/en-us/azure/cognitive-services/face/>
- <https://docs.microsoft.com/en-us/learn/modules/detect-analyze-faces/>