Guided Projects Artificial Intelligence & Machine Learning

Guided Projects: Supervised Learning

Text Detection

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Course	AI and ML (Batch 5)
Problem Statement	Detect text present in the image, followed by surrounding it with a rectangular bounding box.

Software requirements prerequisites

Anaconda

Python 3.8

Python Packages

- pytesseract
- cv2
- os
- matplotlib

Steps

1. Image Preprocessing

Text Extraction from the Image using Pytesseract

Load the libraries

In [484]:
```
import cv2
import pytesseract
import os
import matplotlib.pyplot as plt
```

In [485]:
```
path = os.getcwd()
exe_path = os.path.join(os.path.join(path ,'Tesseract-OCR'), 'tesseract.exe')
pytesseract.pytesseract.tesseract_cmd = exe_path
```

Read the Image as Gray Scale Image

In [486]:
```
img= cv2.imread('./Data/Guided_project1.png',cv2.IMREAD_GRAYSCALE)
```

Resize the image

In [492]:
```
print("Before resizing:", img.shape)
img = image_resize(img,height=700)
print("After resizing:", img.shape)
```

```
Before resizing: (544, 906)
After resizing: (700, 1165)
```

Convert into binary image

In [493]:
```
img = binary_image(img, 110, 255)
```

2. Find possible contours that represent the text

Display Contours

In [494]:
```
contour_img = find_text_contours(img)
plt.figure(figsize = (30,30))
plt.imshow(contour_img)
plt.show()
```

3. Read the text from the image using pytesseract.

Read the text from the Image

In [495]:
```
custom_config = r'--oem 3 --psm 11'
text = pytesseract.image_to_string(img,lang='eng', config=custom_config)
print(text)
```

```
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Text Detection

Text detection is the process of detecting the text present in the image‘ followed by
surrounding it with a rectangular bounding box. Text detection can be carried out using
image-based techniques or machine learning-based techniques In image-based
techniques an image is segmented into multiple segments. and statistical features of connected
components are utilised to form the text Whereas Machine learning approaches use support
vector machines and convolutional neural networks to classify the components into text and
non-text.
```