NUMBER PLATE LOCALIZATION

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GUIDE:

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OBJECTIVE

- To build a high recall Number Plate Detector System which will localize the number plate as the Region of Interest given the image of a Car/Vehicle.

ALGORITHM USED

1. Read the Image:-

```
image = cv2.imread(imagePath)
```

ALGORITHM USED

2. Convert Image to Grayscale:-

```
grayscaleImage = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
```

ALGORITHM USED

3. Noise Removal using Bilateral Filtering:-

```
noiseRemovedImage = cv2.bilateralFilter(grayscaleImage, 9, 75, 75)
```

ALGORITHM USED

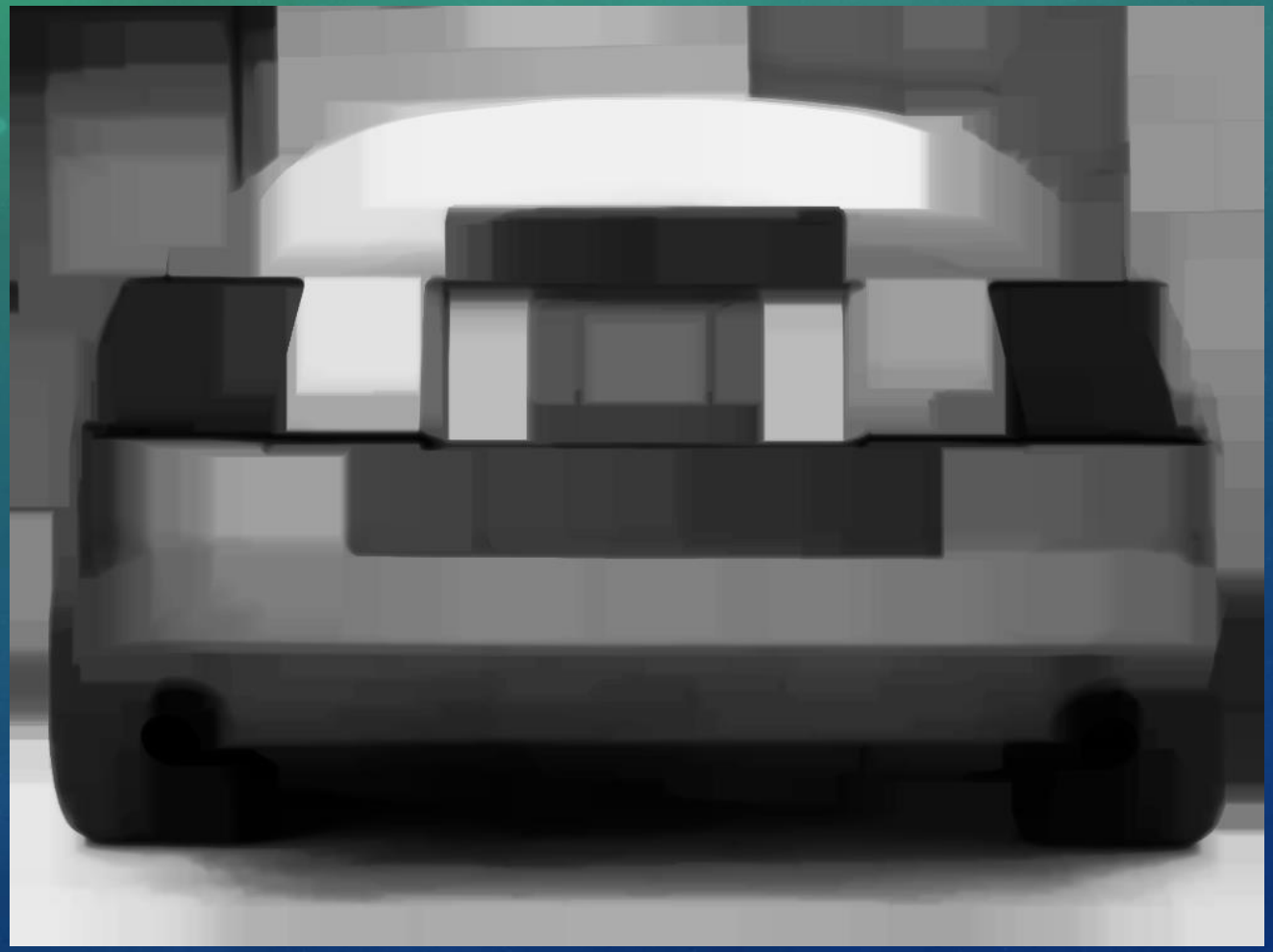
4. Histogram Equalization for Improving Contrast:-

```
histEqImage = cv2.equalizeHist(image)
```

ALGORITHM USED

5. Morphological Opening of Histogram Equalized Image using 5x5 Kernel:-

```
morphImage = cv2.morphologyEx(histEqImage, cv2.MORPH_OPEN, structElem, iterations=15)
```



ALGORITHM USED

6. Subtracting the morphed image from Histogram Equalized Image:-

```
subtractedImage = cv2.subtract(histEqImage, morphImage)
```

ALGORITHM USED

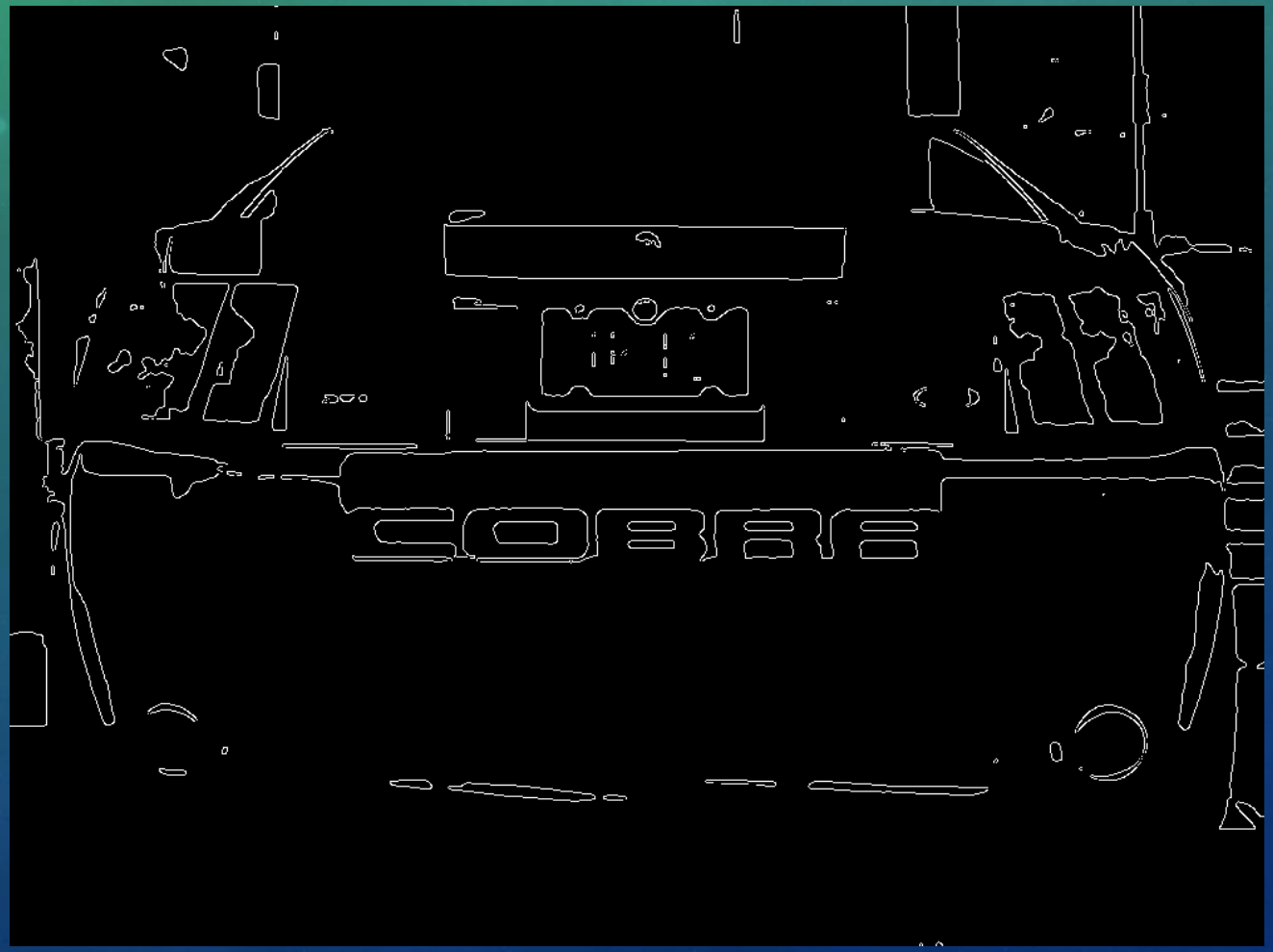
7. Thresholding subtracted image:-

```
threshImage = cv2.threshold(subtractedImage, 0, 255, cv2.THRESH_OTSU)
```

ALGORITHM USED

8. Canny Edge Detection:-

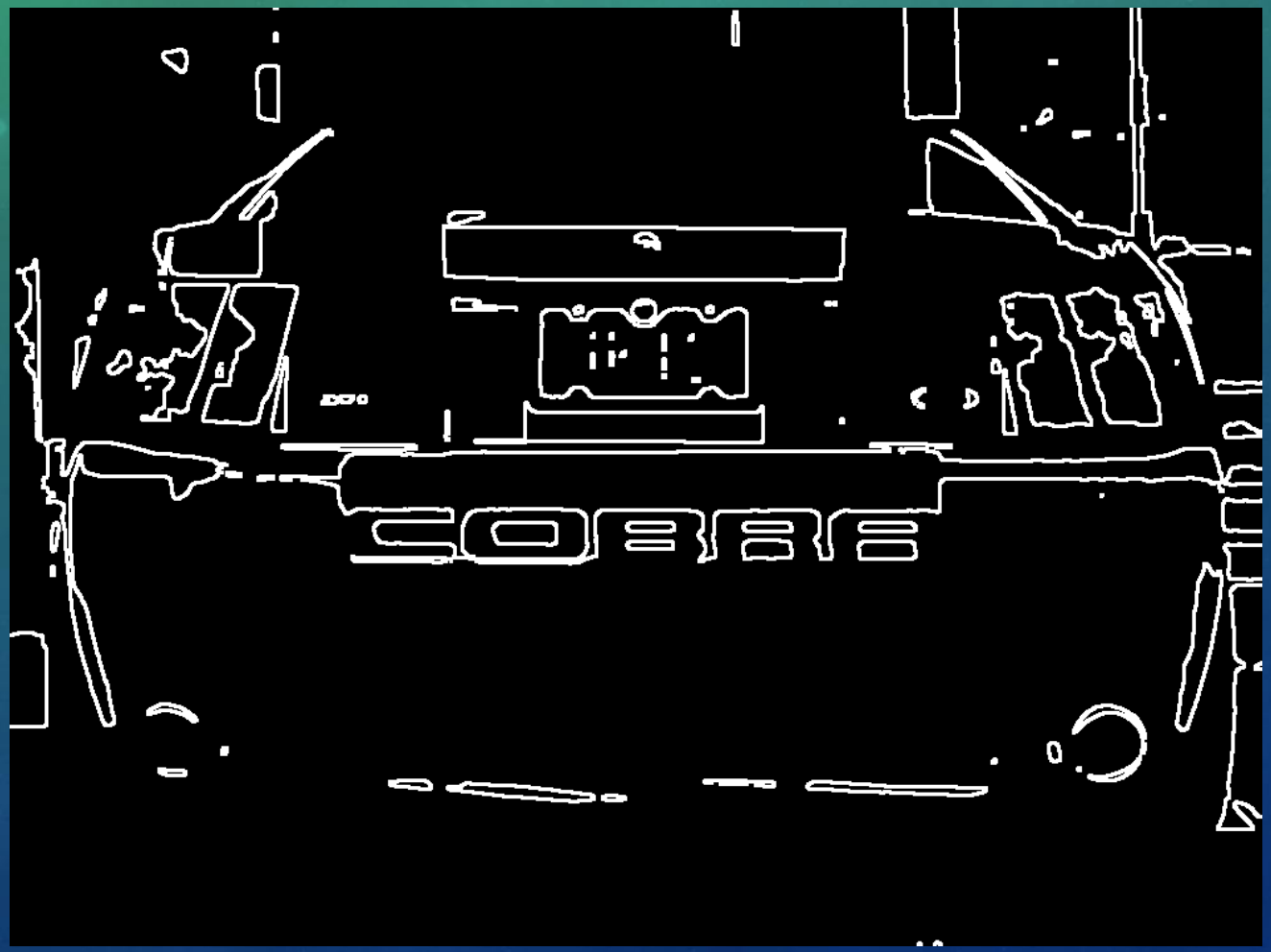
```
edgeDetectedImage = cv2.Canny(threshImage, threshold1=250, threshold2=255)
```



ALGORITHM USED

9. Dilation of Edges for better Contour Detection using 3x3 Kernel:-

```
dilatedImage = cv2.dilate(edgeDetetctedImage, structElem, iterations=1)
```



ALGORITHM USED

10. Contour Detection and Polygon Approximation to find Number Plate:-

```
1. contours = cv2.findContours(image, cv2.RETR_TREE, cv2.CHAIN_APPROX_SIMPLE)
2. approximatedPolygon = cv2.approxPolyDP(contour, 0.06*contourPerimeter, closed=True)
```

THANK YOU