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Code Explanation for Edge Detection of an image using Canny

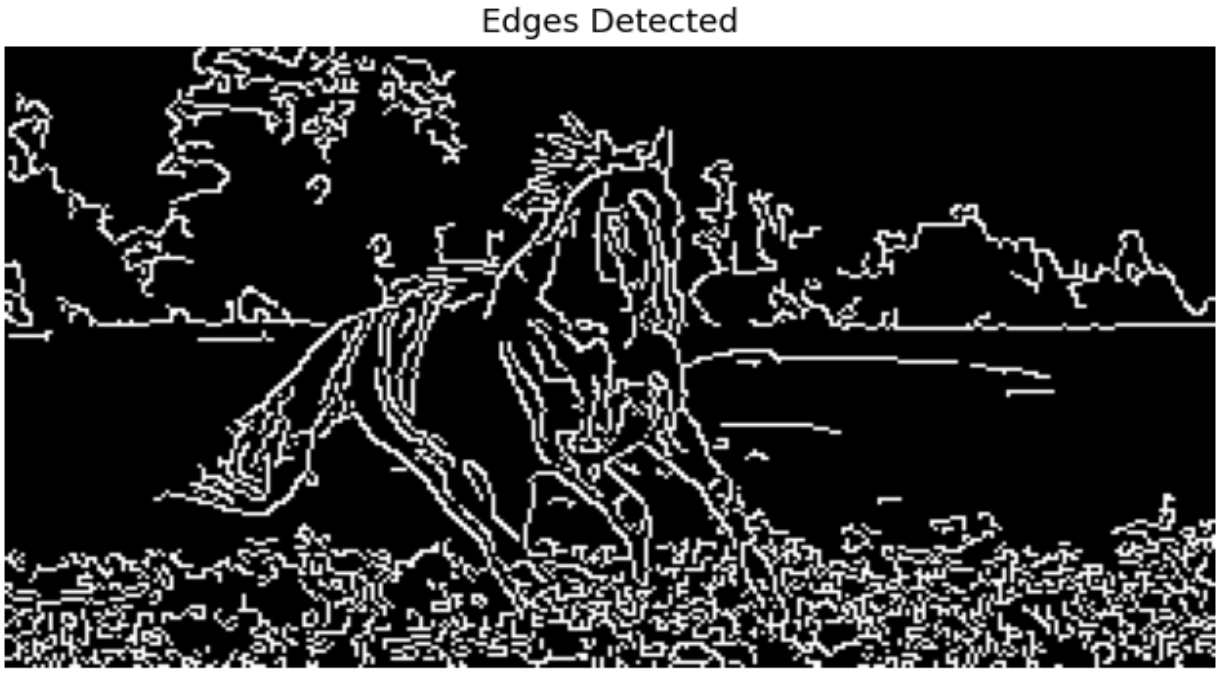
```
import cv2
import matplotlib.pyplot as plt

# Load the image in grayscale
image = cv2.imread('C:/Users/asus/Desktop/Tuwaiq Academy/Dr.
Afshan/horse.jpg', cv2.IMREAD_GRAYSCALE)

# Apply the Canny edge detection algorithm
edges = cv2.Canny(image, 100, 200)

# Display the edges using matplotlib
plt.figure(figsize=(8, 8))
plt.imshow(edges, cmap='gray')
plt.title('Edges Detected')
plt.axis('off')  # Hide the axes
plt.show()
```

Output



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1. Importing Libraries:
2. import cv2
3. import matplotlib.pyplot as plt

    cv2 (OpenCV) is used for reading and processing images.

    matplotlib.pyplot (as plt) is used for displaying images.

2. Load the Image in Grayscale:
3. image = cv2.imread('C:/Users/asus/Desktop/Tuwaiq Academy/Dr. Afshan/horse.jpg', cv2.IMREAD_GRAYSCALE)

    cv2.imread() loads the image from the specified file path.

    cv2.IMREAD_GRAYSCALE ensures the image is loaded in grayscale, which is required for edge detection since color information isn't necessary for identifying edges.

3. Apply Canny Edge Detection:
4. edges = cv2.Canny(image, 100, 200)

    cv2.Canny() applies the Canny edge detection algorithm to the grayscale image.

    Thresholds 100 and 200:

    - Pixels with gradient values above 200 are considered strong edges.
    - Pixels with gradient values below 100 are discarded as non-edges.
    - Pixels with gradient values between 100 and 200 are considered weak edges, and only retained if connected to strong edges.

4. Display the Edges Using Matplotlib:
5. plt.figure(figsize=(8, 8))
6. plt.imshow(edges, cmap='gray')

7. plt.title('Edges Detected')
8. plt.axis('off') # Hide the axes
9. plt.show()

plt.figure(figsize=(8, 8)): Sets the display figure size to 8x8 inches.

plt.imshow(edges, cmap='gray'): Displays the result of the edge detection using a grayscale colormap.

plt.title('Edges Detected'): Adds a title above the image.

plt.axis('off'): Hides the axis labels for a cleaner view of the image.

plt.show(): Displays the image with the detected edges.

Summary:

- ✓ This code loads an image, applies Canny edge detection to detect edges, and then displays the result using Matplotlib.
- ✓ Canny edge detection identifies areas with rapid intensity changes in the image, which often correspond to the edges of objects.