```python
import cv2
import numpy as np
import matplotlib.pyplot as plt

# Load the image
image_path = "/content/Screenshot 2025-01-30 114305.png"  # Update path if needed
image = cv2.imread(image_path)
gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)

# Step 1: Edge-Based Segmentation using Canny Edge Detector
edges = cv2.Canny(gray, 50, 150)

# Step 2: Region-Based Segmentation using Thresholding
_, thresholded = cv2.threshold(gray, 127, 255, cv2.THRESH_BINARY)

# Step 3: Hough Line Transform to Detect Lines
lines = cv2.HoughLinesP(edges, 1, np.pi/180, 68, minLineLength=15, maxLineGap=250)
if lines is not None:
    for line in lines:
        x1, y1, x2, y2 = line[0]
        cv2.line(image, (x1, y1), (x2, y2), (0, 255, 0), 2)

# Step 4: Hough Circle Transform to Detect Circular Objects
circles = cv2.HoughCircles(gray, cv2.HOUGH_GRADIENT, dp=1.2, minDist=30, param1=50, param2=30, minRadius=10, maxRadius=100)
if circles is not None:
    circles = np.uint16(np.around(circles))
    for i in circles[0, :]:
        cv2.circle(image, (i[0], i[1]), i[2], (0, 0, 255), 2)  # Draw the circle
        cv2.circle(image, (i[0], i[1]), 2, (255, 0, 0), 3)  # Draw center point

# Display the results
plt.figure(figsize=(15, 5))
plt.subplot(1, 3, 1)
plt.imshow(edges, cmap="gray")
plt.title("Canny Edge Detection")

plt.subplot(1, 3, 2)
plt.imshow(thresholded, cmap="gray")
plt.title("Region-Based Segmentation (Thresholding)")

plt.subplot(1, 3, 3)
plt.imshow(cv2.cvtColor(image, cv2.COLOR_BGR2RGB))
plt.title("Hough Transform (Lines & Circles)")

plt.show()
```
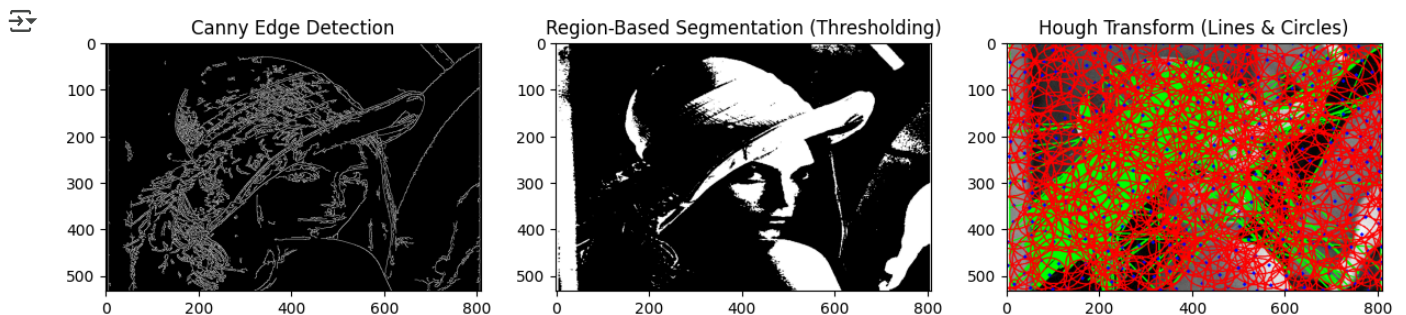


```python
pip install ultralytics
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!pip install ultralytics
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```

```python
import os

image_path = "/content/Screenshot 2025-01-30 114305.png"

# Check if the file exists
if not os.path.exists(image_path):
    print(f"Error: The file at {image_path} was not found!")
else:
    print("Image file found, proceeding with detection.")

# Try reading the image again
image = cv2.imread(image_path)
if image is None:
    print("Error: Image could not be loaded. Check the file format and path.")
```

⇥ Image file found, proceeding with detection.

```python
from google.colab.patches import cv2_imshow
import cv2
from ultralytics import YOLO

# Load YOLO model
yolo = YOLO("yolov8n.pt")

# Load an image
image_path = "/content/Screenshot 2025-01-30 114305.png"
image = cv2.imread(image_path)

# Check if image is loaded properly
if image is None:
    print(f"Error: Could not load image from {image_path}")
else:
    # Perform YOLO object detection
    results = yolo(image)

    # Draw bounding boxes
    for result in results:
        for box in result.boxes:
            x1, y1, x2, y2 = map(int, box.xyxy[0])
            confidence = box.conf[0]
            label = result.names[int(box.cls[0])]

            # Draw bounding box and label
            cv2.rectangle(image, (x1, y1), (x2, y2), (0, 255, 0), 2)
            cv2.putText(image, f"{label} ({confidence:.2f})", (x1, y1 - 10),
                        cv2.FONT_HERSHEY_SIMPLEX, 0.5, (0, 255, 0), 2)

    # Show YOLO detection results
    cv2_imshow(image)  # Use cv2_imshow instead of cv2.imshow()
```

```
0: 448x640 2 persons, 1 umbrella, 506.1ms
Speed: 8.4ms preprocess, 506.1ms inference, 2.2ms postprocess per image at shape (1, 3, 448, 640)
```


Start coding or generate with AI.

Start coding or generate with AI.