

36. Vehicle Detection in a Video frame using OpenCV .

PROGRAM:

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*EXP-36.py - C:/Users/reddy/OneDrive/Desktop/COMPUTER VISION/EXP-36.py (3.11.9)*
File Edit Format Run Options Window Help
import cv2
# Step 1: Load video
cap = cv2.VideoCapture(r"C:/Users/reddy/OneDrive/Desktop/COMPUTER VISION/TRAFFIC.mp4")
# Step 2: Background subtractor
fgbg = cv2.createBackgroundSubtractorMOG2()
while True:
    ret, frame = cap.read()
    if not ret:
        break
    # Step 3: Convert to grayscale
    gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)
    # Step 4: Apply background subtraction
    fgmask = fgbg.apply(gray)
    # Step 5: Remove noise
    kernel = cv2.getStructuringElement(cv2.MORPH_RECT, (5,5))
    fgmask = cv2.morphologyEx(fgmask, cv2.MORPH_CLOSE, kernel)
    # Step 6: Find contours
    contours = cv2.findContours(
        fgmask,
        cv2.RETR_TREE,
        cv2.CHAIN_APPROX_SIMPLE
    )
    # Step 7: Draw rectangles for vehicles
    for cnt in contours:
        area = cv2.contourArea(cnt)
        # Ignore small objects
        if area > 1000:
            x, y, w, h = cv2.boundingRect(cnt)
            cv2.rectangle(frame, (x,y), (x+w, y+h), (0,255,0), 2)
            cv2.putText(frame, "Vehicle",
                       (x, y-10),
                       cv2.FONT_HERSHEY_SIMPLEX,
                       0.6,
                       (0,255,0), 2)
    # Step 8: Display output
    cv2.imshow("Vehicle Detection", frame)
    cv2.imshow("Foreground Mask", fgmask)
    # Press ESC to exit
    if cv2.waitKey(30) & 0xFF == 27:
        break
cap.release()
cv2.destroyAllWindows()
```

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OUTPUT:



