TeamRoverX

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Aim: Detect a black arrow on a white background

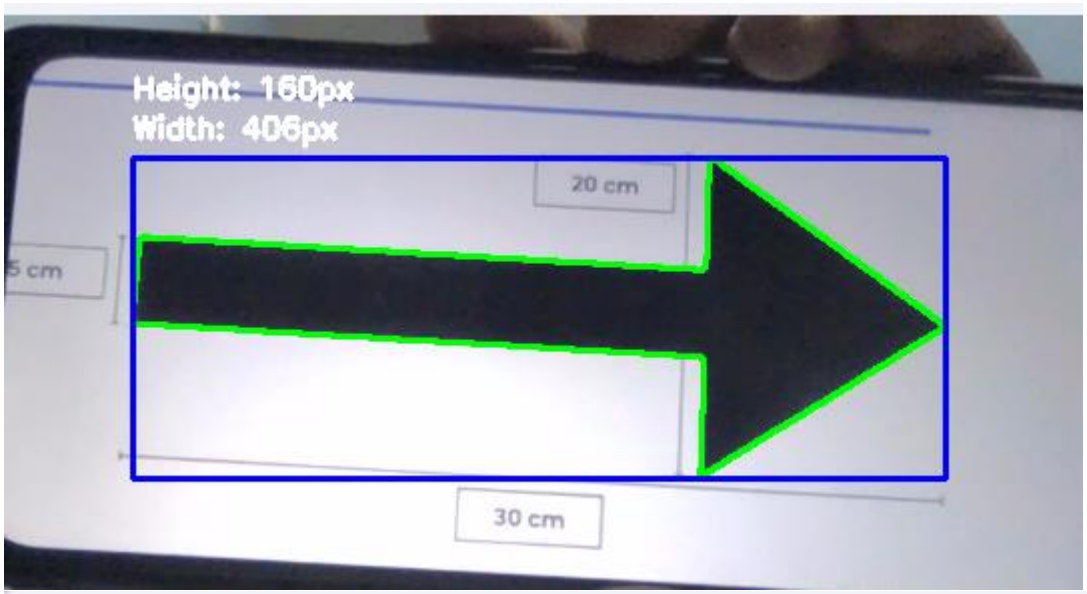
Task Outline:
Your task is to use the laptop webcam to detect a black arrow on a white background with the following dimensions:

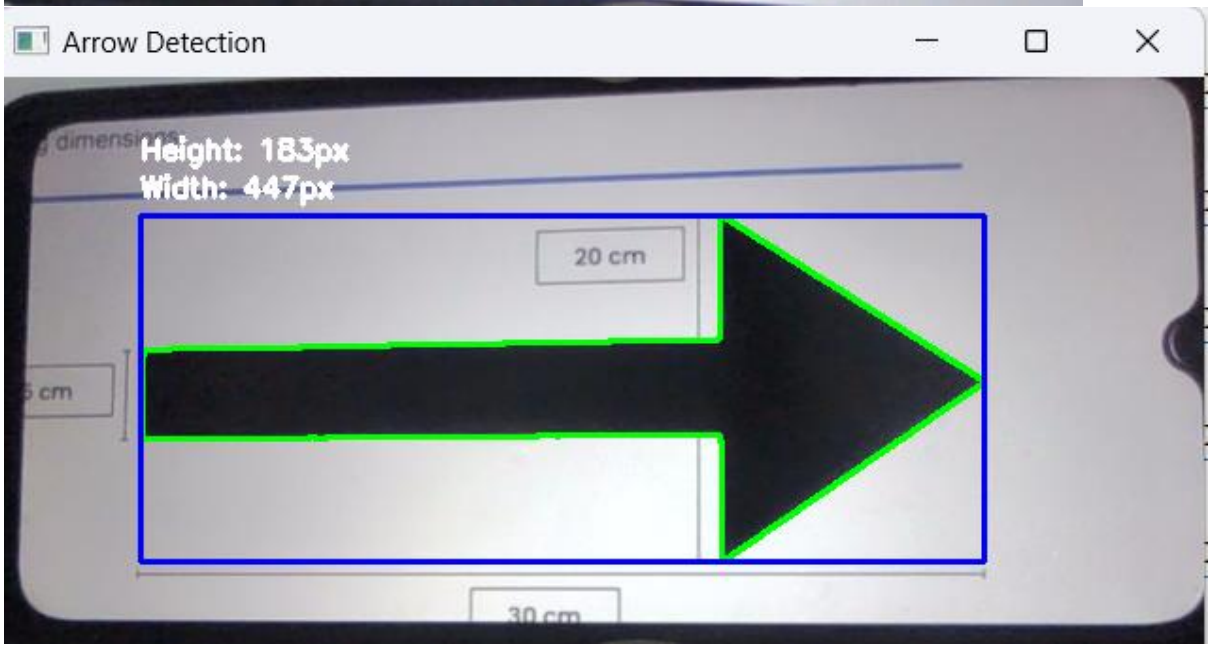
PYTHON CODE:

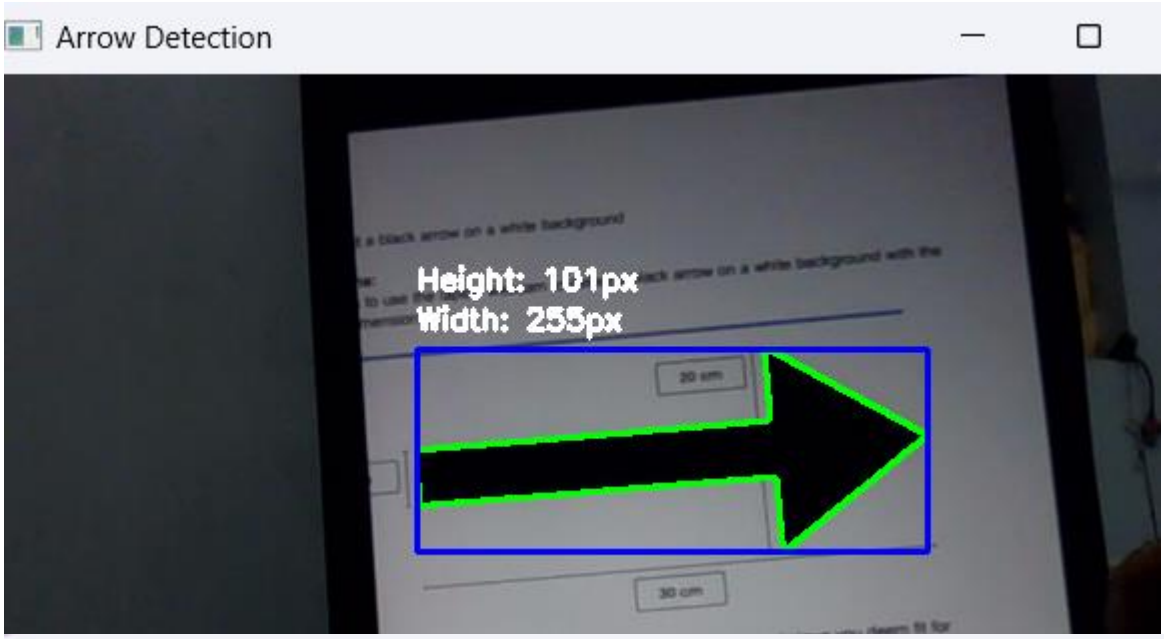
```
import cv2

def detect_arrow(frame):
    # Convert the frame to grayscale
    gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)

    edges = cv2.Canny(gray, 50, 150)

    contours, _ = cv2.findContours(edges, cv2.RETR_EXTERNAL,
cv2.CHAIN_APPROX_SIMPLE)

    for contour in contours:
```

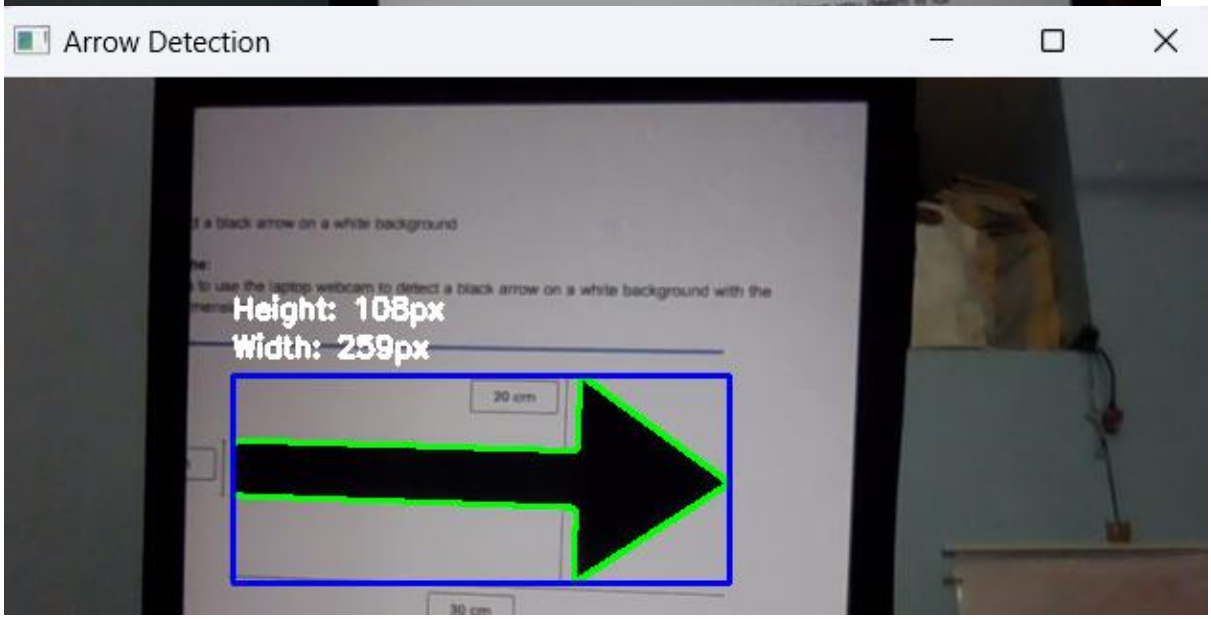
```
        approx = cv2.approxPolyDP(contour, 0.03 *
cv2.arcLength(contour, True), True)

        if len(approx) == 7:
            # Calculate the area of the contour
            area = cv2.contourArea(contour)

            # If the area is large enough, consider it as an arrow
            if area > 1000:
                cv2.drawContours(frame, [contour], 0, (0, 255, 0), 2)
                x, y, w, h = cv2.boundingRect(contour)
                cv2.rectangle(frame, (x, y), (x + w, y + h), (255, 0, 0), 2)


                cv2.putText(frame, f'Width: {w}px', (x, y - 10),
cv2.FONT_HERSHEY_SIMPLEX, 0.5, (255, 255, 255), 2)
                cv2.putText(frame, f'Height: {h}px', (x, y - 30),
cv2.FONT_HERSHEY_SIMPLEX, 0.5, (255, 255, 255), 2)

    cv2.imshow('Arrow Detection', frame)


cap = cv2.VideoCapture(0)

while True:
    ret, frame = cap.read()

    detect_arrow(frame)

    if cv2.waitKey(1) & 0xFF == ord('q'):
        break

cap.release()
cv2.destroyAllWindows()
```

SAMPLE OUTPUTS:






Arrow Detection
Height: 101px
Width: 255px


Arrow Detection
Height: 108px
Width: 259px