

Ungraded Assignment

Goal: Play with OpenCV

Gousepeer Arella

IMT2020042

Draw a
bounding box
around the
foreground
object

```
import cv2
img = cv2.imread('InputUngradedAssignment1.jpg')
height, width, channels = img.shape
img = cv2.rectangle(img, (1300, 300), (3300, 2100), (255, 128, 128), 5)
print(height, width)
cv2.imwrite('bordered.jpg', img)
cv2.imshow('Image', img)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Draw a
bounding box
around the
foreground
object



Convert to gray-scale and detect edges using Canny edge detection method

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

img = cv2.imread('InputUngradedAssignment1.jpg', cv2.IMREAD_GRAYSCALE)

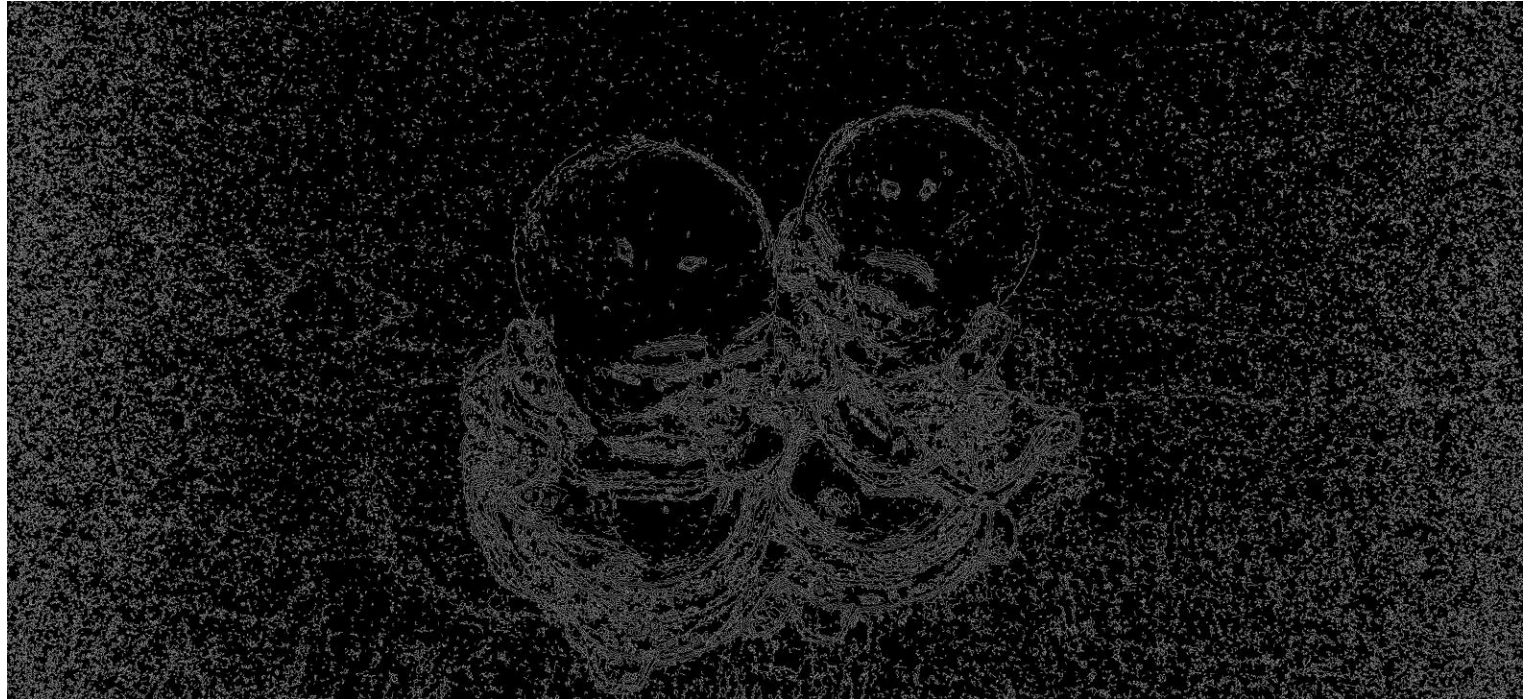
t_lower = 100
t_upper = 200
aperture_size = 5

edge = cv2.Canny(img, t_lower, t_upper,
                  apertureSize=aperture_size, L2gradient=True)

cv2.imwrite('canny_edged.jpg', edge)

cv2.imshow('Image', edge)
cv2.waitKey(0)
cv2.destroyAllWindows()
```


Convert to gray-scale and detect edges using Canny edge detection method



Use K-means for segmentation on the RGB image, and display the segmented region

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

img = cv2.imread('InputUngradedAssignment1.jpg')

# Change color to RGB (from BGR)
img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)

# 3D to 2D reshaping
pixels = img.reshape((-1,3))
pixels = np.float32(pixels)

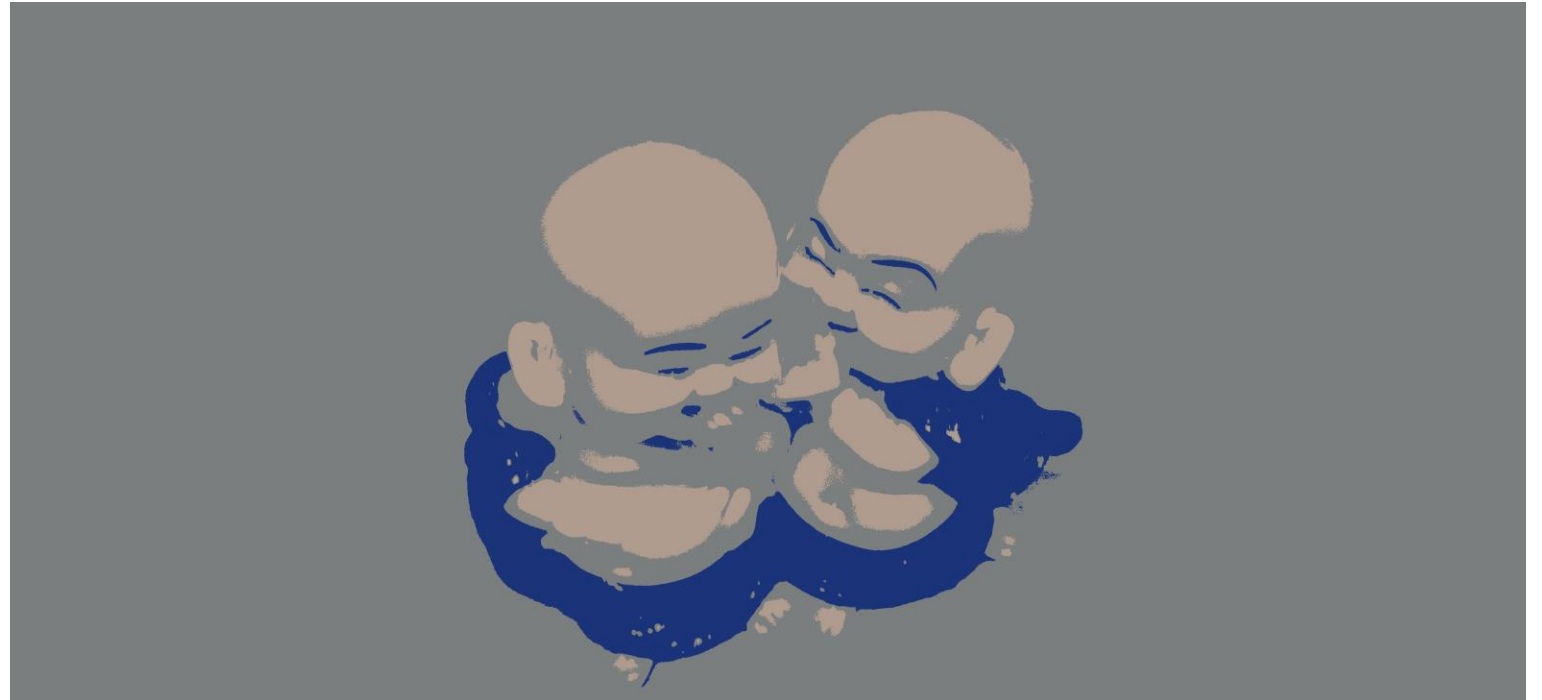
# stops when iter = 100 OR acc = 85%
criteria = (cv2.TERM_CRITERIA_EPS + cv2.TERM_CRITERIA_MAX_ITER, 150, 0.80)

k = 7
retval, labels, centers = cv2.kmeans(pixels, k, None, criteria, 10, cv2.KMEANS_RANDOM_CENTERS)

# convert data into 8-bit values
centers = np.uint8(centers)
segmented_data = centers[labels.flatten()]

# reshape data into the original image dimensions
segmented_image = segmented_data.reshape((img.shape))
file_name = 'segmented_' + str(k) + '.jpg'
cv2.imwrite(file_name, segmented_image)
plt.imshow(segmented_image)
plt.show()
```

Use K-means for
segmentation on
the RGB image,
and display the
segmented region
 $K = 3$



Use K-means for
segmentation on
the RGB image,
and display the
segmented region
 $K = 7$





Thank You